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# INTRODUCTION.



THE great Pleasure that Builders and Workmen of all Kinds have of late Years taken in the Study of Architecture; and the great Advantages that have accrued to those, for whom they have been employed; by having their Works executed in a much neater and more magnificent Manner than was ever done in this Kingdom before; has been the real Motive that induced me, to the compiling of this Work, for their further Improvement.

Besides, as the Study of Architecture is really delightful in all its Process; its Practice is evidently of the greatest Importance to Artificers in general; and its Rules so easy, as to be acquired at leisure Times, when the Business of Days is over, by Way of Diversion: 'Tis a Matter of very great Surprise to me; how any Person dare presume to discourage others from the Study thereof, and thereby render them very often less serviceable to the Publick than so many Brutes.

But to prevent this Infection from diffusing its poisonous Effluvia's any further; and in Consideration that amongst all Sorts of People, there are some, in whom Nature has implanted that noble Faculty of the Soul, called REASON, *whereby we judge of Things*: I have therefore, at a very great Expence, compiled this Work for the common Good of all *Men of Reason*, whose Businesses require the Knowledge of this Art, and who desire to become Proficients therein.

The first Work to be done in order thereto, is perfectly to understand the Five Orders of Columns, which here I have placed precedent to the Designs for that Purpose; and which I peremptorily admonish, be well understood, before any Proceeding be made to attempt the Art of Designing.

The Five Orders of Columns have their Members so easily adjusted, that the Reader, after having once read their Explanations, need never read them a second Time. Nor will their general Proportions escape his Memory, after having practised them about half a Dozen Times.

The Designs contained herein, and the Orders preceding them, are in general adjusted by Aliquot Parts; so that when the Height of any Work to be made, is known, (which in all Cases must first be given) and divided into some certain Number of equal Parts, as affixed to every Design; the Heights and Projections of its Members are thereby determined. And, that young Students may not be at a Loss herein, I have, for their further Instructions, shewn their particular Members, with their Measures at large; which the Designs of *Inigo Jones*, and all other Masters to this Time, are defective in, and consequently are of no more Use to Workmen, than so many Pictures to gaze at; not so many Rules, or Examples to work by, or after; unless to such, who understand the Architecture thereof, as well as their Authors, who designed them.

I shall now proceed to explain the Orders in the most familiar Manner; which will render the Understanding of all the following Designs conspicuous to every Capacity.

B. LANGLEY.

## C O N T E N T S.

Of the Fourteen Plates of ROOFS, &c. which are added to the *Work*.

Plate I. The splicing or lengthening of Beams explained; a Beam Camber, with an Inch and quarter Spring, to 25 Feet extent; different Trusses for Girders and Beams, different Scarfings for Wall-plates, Raifings, &c. Plate II. Requisites for square Roofs explained. Plate III. A second Method for splicing and lengthening of Beams. The Lengths and Angles of the Backs of Hip-Rafters in irregular Roofs explained. The Lengths and Angles of the Backs of Hip-Rafters in polygonal Roofs explained. Plate IV. Circular, Elliptical, &c. Hip-Rafters to octangular and spheroidal Roofs explained. Plate V. To lay out a square Roof in Ledgement. Plate VI. A square double Roof (commonly called an *M Roof*) in Ledgement. Plate VII. An oblong double Roof (returned with single Hips at one End,

with an open Gutter, and double hip'd at the other End) in Ledgement. Plate VII. A hip'd Roof in Ledgement having one End square, and the other End bevel with a cambred Flat for a Balcony on its Top. Plate IX. An irregular double Roof in Ledgement. Plate X. Two Varieties of framing irregular single Roofs which are hip'd at one End, and gabled at the other. Plate XI. Two Examples of irregular Roofs in Ledgement. Plate XII. Eight Examples of Trusses for principal Rafters true pitch. Plate XIII. Ten Examples for trussed Roofs. Plate XIV. Sections of trussed Roofs, with the Roofs of the Churches of *St. Paul Covent Garden*, and *Greenwich*, with Remarks.





T H E  
ART of *DESIGNING* and *WORKING*  
T H E  
ORNAMENTAL PARTS of *BUILDINGS*.

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C H A P. I.

Of the Manner of Proportioning the Five Orders of Columns in Architecture  
by Aliquot Parts.

I. Of the TUSCAN ORDER.

PROB. II. *To proportion the Heights of the principal Parts of the Tuscan Order, Fig. I. Plate I.*



**PRACTICE.** Divide  $ao$  a given Height into 5 equal Parts, the lower 1 Part  $ko$  is the Height of the Pedestal. Divide  $ak$  the remaining 4 Parts into 5 equal Parts, the upper 1 Part  $ad$ , is the Height of the Entablature, and  $dk$ , the lower 4, of the Column.

PROB. II. *To proportion the Heights of the Principal Parts of the Tuscan Pedestal, Fig. II.*

Divide  $vw$ , a given Height into 4 Parts, the

lower 1, is the Height of the Plinth,  $\frac{1}{3}$  of the next 1, of the Mouldings on the Plinth, and half the upper 1 of the Cornice.

PROB. III. *To proportion the Heights of the Members on the Plinth; and of the Cornice of the Tuscan Pedestal.*

If the Mouldings on the Plinth be an Inverted *Cima recta* between two Fillets, divide the Height in 6, give 1 to each Fillet, and 4 to the *Cima*; but if the Mouldings are a *Caveto* on a Fillet, give 4 to the *Caveto* and 2 to the Fillet. Divide the Height of the Cornice in 6, give the upper 1 to the *Regula E*, the next 3 to the *Fascia F*, and the remaining 2 to a *Cima reversa*, or a *Caveto* with its Fillet, whose Height is half one Part.

C

PROB.



## Of the TUSCAN ORDER.

**PROB. IV.** *To determine the Projections of the Dado, Base and Cornice of the Tuscan Pedestal.*  
Fig. II. Plate I.

(1.) Divide  $QN$ , equal to the Height of the Base in 5 Parts, and the upper 1 in 7 Parts; Make  $zO$  the Projection of the Dado, equal to 4 Parts and  $\frac{4}{5}$ . (2.) The Projection of the Plinth ( $qp$ ) is equal to ( $rq$ ) the Height of the Mouldings on the Plinth, as also is the Projection of the Cornice, from the Upright of the Dado, in every Order. Draw  $xy$  at Pleasure, at any Part against the Dado, which divide in 6 Parts, and terminate the Members in the Base and Cornice, as is expressed by the dotted Lines proceeding upward and downward from them.

Fig. G. exhibits the Manner of describing a Cima reversa at large, whose Projection is  $\frac{2}{3}$  of its Height.

**PROB. V.** *To proportion the Heights of the principal Parts of the Tuscan Column, Fig. I. Pl. II.*

(1.) Divide the given Height in 7 equal Parts, and take 1 for the Diameter of the Column at its Base; therefore note, that the Height of the Column is 7 Diameters. (2.) The Height of the Base, and of the Capital, are each half a Diameter.

**PROB. VI.** *To proportion the Heights of the Members of the Base of the Tuscan Column.*

Divide  $st$  the Height of the Base in 2 Parts, as the Base on the Pedestal, Fig. II. Plate I. the lower 1 is the Height of the Plinth  $D$ , and the upper 1 of its Torus  $C$ , with the Cincture  $B$ , which is a fourth Part thereof.

**PROB. VII.** *To proportion the Heights of the Members of the Tuscan Capital.*

Divide, the Height of the Capital  $MR$ , into 3 Parts, as in Fig. II. Plate II. give the upper 1 to its Abacus  $MN$ , the Middle 1 to the Ovolo  $O$  with its Fillet  $P$ , which is a sixth Part, and the lower 1 to  $Q$  the Neck of the Capital. The Height of the Astragal  $RS$ , is equal to Half the Height of the Neck, which divide in 3: Give 2 to the Astragal  $R$ , and 1 to the Fillet  $S$ . Note, The Astragal in every Order is a Part of the Shaft, not of the Capital.

**PROB. VIII.** *To diminish the Shaft of the Tuscan, or any other Column, Fig. I. Plate II.*

(1.) Divide the given Height of the Shaft between the Cincture  $B$ , and the Astragal  $A$ , into 3 equal Parts, and draw the Line  $nx$ , through the first Part, parallel to the Cincture 4, 5; make  $B4$ ,  $B5$ , and  $nx$ ,  $xy$ , each equal to Half a Diameter. and draw the Lines 4  $n$ , 5  $y$ ; make  $A4$ , and  $A5$ , each equal to  $\frac{1}{4}$  or  $\frac{2}{5}$  of  $nx$ , according to what Quantity you have a Mind to diminish the Shaft; some making the Diminution  $\frac{1}{4}$  or  $\frac{1}{5}$ , as in this Example. (2.) On  $x$  describe the Semicircle  $nr$ , and draw the Lines  $br$ , and  $ci$ , from the Points  $bc$ , parallel to the central Line  $AB$ . Divide the Arches  $nr$  and  $iy$ , each into any Number of like equal Parts, suppose four, as at  $opq$ , and 2, 3,  $z$ , and draw the Ordinates  $q2$ ,  $p3$ , and  $oz$ . (3.) Divide  $Ax$  into the same Number of equal Parts as in  $nr$ , or  $iy$ , as at  $lbd$ , and draw the Lines,  $ef$  equal to  $q2$ ;  $gi$  equal to  $p3$ , and  $km$  equal to  $oz$ . (4.) From  $n$ , through the Points  $kge$ , draw the curved Line  $nkgcb$ , and from  $y$  through the Points  $mif$ , the curved Line  $ymif$ , which completes the Diminution of the Shaft as required.

**PROB. IX.** *To determine the Projections of the Members in the Base of the Tuscan Column, Fig. I. Plate I.*

(1.) Divide the Semidiameter in 3 Parts, and turn 1 Part out for the Projection of the Plinth, which in every Order, stands exactly over the Dado of the Pedestal. (2.) The Projection of the Torus is always the same as of the Plinth. (3.) Divide the Projection of the Plinth before the Upright of the Shaft into 4 Parts, and the third Part into 4, then the first 1 Part terminates the Projection of the Cincture  $B$ .

**PROB. X.** *To determine the Projections of the Members in the Tuscan Capital, Fig. II. Pl. II.*

Divide the Semidiameter of the Shaft continued to the Abacus into 2 Parts, as at  $f$ , and make the Projection of the Abacus, equal to 1 of those Parts, when the Abacus is finished with a Fillet, and to  $\frac{2}{3}$  of 1 Part, when without a Fillet. The Projection of the Fillet under the Astragal is equal to twice its own Height, and the Fillet under the Ovolo, to its Height.

**PROB.**



PROB. XI. *To proportion the Heights of the principal Parts of the Tuscan Entablature, Fig. II. Plate II.*

Divide A M the given Height, into 7 equal Parts; give 2 to the Architrave, 2 to the Freeze, and 3 to the Cornice.

PROB. XII. *To proportion the Heights of the Members of the Tuscan Architrave.*

If the Architrave is to consist but of 1 Fascia, divide its Height in 7 Parts, and give 1 and  $\frac{1}{3}$  to the Height of the Tenia I, and the Remainder to the Fascia K; but if of two Fascia's, give the lower 2 to the small Fascia, the next 4 to the great Fascia, and the upper 1 to the Tenia.

PROB. XIII. *To proportion the Heights of the Members of the Tuscan Cornice.*

The Height of the Cornice consisting of 3 Parts divide the upper 1 Part in 4, and when this Entablature is finished with a Cima recta, give the upper 1 to its Fillet; but when with an Ovolo, give the lower 1 to its Astragal. The middle 1 Part of the Cornice being divided in 6 Parts, give the upper 1 to the Fillet C, and the other 5 to the Corona D. The lower 1 Part of the Cornice, divided in 2 Parts, give the upper 1 to the Ovolo E, and the other 1 to its Caveto G, and Fillet E, which is  $\frac{1}{4}$  Part thereof.

PROB. XIV. *To determine the Projections of the Members in the Tuscan Architrave and Cornice. Fig. II. Plate II.*

(1.) The Projection of the lower Fascia of the Architrave, and of the Freeze, in every Order, is always the same from the central Line of the Column as the Upright of the Column, at its Astragal; and therefore are all directly over each other. It is from the upright Line of the Face of the Freeze, that the Projections of all the Members in every Architrave and Cornice of each Order, is accounted. (2.) The Projection of the Tenia I is equal to its Height, and the upper Fascia, when the Architrave has two, projects  $\frac{1}{3}$  thereof. (3.) The Projection of the Cornice, is (as 'tis in all the other Orders, the Dorick only excepted) equal to its own Height. Draw *bc*, equal to the whole Projection, which divide in 3

equal Parts; then  $\frac{1}{2}$  the first Part, terminates the Fillet F, of the Caveto G. The first Part terminates the Ovolo E, the second Part the Corona D, and the first sixth Part of the last Part, the Fillet C. And thus this Order is compleated, and which being practiced about half a dozen Times, will render the understanding of this and the following Order, easy and delightful.

## II. Of the DORICK ORDER.

PROB. I. *To proportion the Heights of the principal Parts of the Dorick Order, Fig. I. Pl. III.*

PRACTICE. Divide *ak* a given Height, into 5 Parts (as before in the Tuscan) the lower 1 Part *ik*, is the Height of the Pedestal. Divide *ai* the remaining 4 Parts in 5 Parts, the upper 1 Part *af* is the Entablature, and *fi*, the lower 4 Parts, of the Column. Here you see that the Manner of proportioning the principal Parts of the Tuscan and Dorick Orders, is the same.

PROB. II. *To proportion the Heights of the principal Parts of the Dorick Pedestal. Fig. II. Pl. III.*

Divide the Height in 4 Parts, give 1 and  $\frac{1}{2}$  to the Base;  $\frac{1}{2}$  the upper 1 to the Cornice, and the Remains to the Dado.

PROB. III. *To proportion the Heights of the Members on the Plinth, and of the Cornice of the Dorick Pedestal, Fig. II. Plate III.*

(1.) Divide *oq* the Height of the Mouldings on the Plinth, in 8 Parts, give the lower 1 Part to the Fillet K, the next 4 to the Cima I, and the upper 3, to an Astragal H, and Fillet G; or to a Fillet and Caveto. (2.) Divide the Height of the Cornice in 2 Parts,  $\frac{1}{4}$  of the upper 1, is the Height of the Regula A and the Remainder, of the Fascia B. The upper Half of the lower 1, is the Height of the Ovolo C, and the lower Half divided in 3, give the upper 1 to the Fillet D, and lower 2 to a Cima Inversa, or Caveto E.

PROB. IV. *To determine the Projections of the Dado, Base, and Cornice of the Dorick Pedestal: Fig. II. Plate III.*

Make *uw* the Projection of the Dado, equal to *xy*, which is the Height of the Plinth divided in



# Of the DORICK ORDER.

in 5 Parts, and  $\frac{1}{3}$  of the upper Part divided in 3, turned up. The Projection of the Plinth and Cornice before the Upright of the Dado, is (as before observed in the *Tuscan* Order) always equal to the Height of the Mouldings on the Plinth, which here at *mn*, being divided in 4 Parts, the Projections of the Members in the Cornice, and Base are determined, as exhibited by the perpendicular dotted Lines.

PROB. V. *To proportion the Heights of the principal Parts of the Dorick Column, Fig. I. Pl. III.*

(1) Divide *fi* the Height of the Column into 8 Parts, and take 1 Part, for the Diameter of the Column at its Base: Therefore note, that the Height of the *Dorick* Column is 8 Diameters. (2.) The Height of the *Dorick* Base and Capital are each Half a Diameter, as those of the *Tuscan*.

PROB. VI. *To proportion the Heights of the Base of the Dorick Column.*

Divide *fb*, Fig. II. Plate III. in 3 Parts, the lower 1 Part is the Height of the Plinth *T*, and  $\frac{3}{4}$  of the Middle 1, of the lower Torus *S*. Half the upper 1 Part, is the Height of the upper Torus *O*, and the Remains between the two Torus's being divided in 6 Parts, give the upper and lower, to the two Fillets *P* and *R*, and the Middle 4 to the Scotia *Q*. The Height of the Cincture *N* is half of the Height of the upper Torus.

PROB. VII. *To proportion the Heights of the Dorick Capital.*

Divide *ab* the Height of the Capital, Fig. II. Plate III. into 3 Parts, and  $\frac{1}{2}$  the upper 1, into 3; give the upper 1 to the Fillet *A*, the other 2 to the *Cima reversa* *B*, and the other  $\frac{1}{4}$  Part to the Abacus *C*. Divide the Middle Part in 3, give the upper 2 to the Ovolo *D*, and the other 1 to an Astragal and Fillet, or Fillet and Caveto, or *Cima reversa*, or to three Annulets, at Pleasure. The Height of the Hypotrachelium *G*, or Neck of the Capital, is the lower 1 Part, and the Height of the Astragal  $\frac{1}{2}$  thereof, as before in the *Tuscan*. The Shaft of this Column is diminished  $\frac{1}{3}$  at its Astragal in Manner aforefaid.

PROB. VIII. *To determine the Projections of the Members of the Base of the Dorick Column.*

(1.) Divide the Semidiameter *i* 3, in 3 Parts, and turn out 1 Part from *i* to *k*, for the Projection of the Plinth, before the Upright of the Column. (2) Divide the Projection *ki*, in 4 Parts, the first one and a half, terminates the Projection of the Fillet *R*; and 2 Parts and half, the Centre of the upper Torus *O*, and Cincture *M*.

PROB. IX. *To describe the Scotia Q at large. as at g; Plate III.*

Divide its Height in 3 Parts, and set one Part, from the second Part towards the Right Hand; then the Points \*\* are the Centers on which the Scotia may be described as required.

PROB. X. *To determine the Projections of the Members of the Dorick Capital. Fig. II. Plate III.*

Divide the Semidiameter of the Column at its Astragal on its Abacus, into 2 Parts, and turn out 1 Part for the Projection of the Abacus; which divide in 4 Parts, and terminate the Projections of the Members, as exhibited by the dotted perpendicular Lines. The Projection of the Astragal *HI*, is determined the same, as that of the *Tuscan* Order.

PROB. XI. *To proportion the Heights of the principal Parts of the Dorick Entablature, Plate IV.*

Divide *ab*, the given Height into 8 equal Parts, give 2 to the Architrave *MNOP*, 3 to the Freeze *L*, and 3 to the Cornice.

PROB. XII. *To proportion the Heights of the Members of the Dorick Architrave.*

Divide the upper one Part of the Architrave in 3, the upper 1, is the Height of the Tenia *M*, and the lower 2 Parts, divided in 3 Parts, the upper 1 Part is the Height of the Fillet *N*, and the next 3 Parts of the Gutta's or Drops *O*.

PROB. XIII. *To proportion the Heights of the Members of the Dorick Cornice.*

Divide the two upper Parts of the Height of the Cornice into 3 Parts, and the upper 1, in 4 Parts; give the upper 1 to the Regula *A*, and the other 3 to the Caveto or *Cima recta* *B*. Divide



vide the next Part in 3, give half the upper 1 to the Fillet C, and the Remains to the Corona D. Divide the third Part in 3, and the upper 1 thereof, in 3; of which, give the upper 1 to the Fillet E, the other 2 to the Cima reversa F; and the Residue of this Part to G, the Fascia of the Mutule EFG. Divide the lower third Part of the Height of the whole Cornice into 3 Parts, and give the lower 1 to K, the Capping of the Triglyphs; divide the next 2, each into 3; give the lower 1 to the Fillet I, and the next 4, to the Ovolo H, or to Ovolo, with its Astragal on the Fillet I. The Height of the Freeze being in 3, divide the upper in 3, and the second will terminate the Heights of the Channels in the Triglyphs; as half the middle 1, doth, that of the Coffers or hollow Pannel, in the Metope Q.

PROB. XIV. *To determine the Projectures of the Members, in the Dorick Entablature.* Plate IV.

(1.) As the Projection of the Cornice is equal to half the Height of the whole Entablature, therefore draw a Line from any Part of the Freeze, as *cd*, equal thereto, which divide in 4 Parts, and the first, third and last, each into 3 Parts, from whence determine the Projection of every Member as expressed by the perpendicular dotted Lines which pass through them from the Profile to the Plan.

PROB. XV. *To proportion a Triglyph, and Metope.*

The Breadth of each Triglyph is always equal to half the Diameter of the Column at its Base; and the Metope or Distance between them, should always be equal to the Height of the Freeze. The Breadth of each Triglyph being divided into 12 Parts, and Lines drawn, as the dotted Lines 1, 2, 3, &c. will form the Limits of the Channellings, and six Gutta's, or Drops, under them. As by the Mutule S, 'tis evident, that the Projection is very considerable, I have therefore added the Plan of the Planceer of the Cornice, wherein VVV represents the under Surface of the Mutules, as they are generally enriched with their 36 Drops, commonly called Bells, and XX are hollow Pannels, or Coffers, enriched with Rosés. By the perpendicular dotted Lines, 'tis evident, that the Distances of the Members in the Plan, are equal to their respective Projections in the Profile.

Fig. W exhibits two Methods for fluting the Shafts of Dorick Columns; that on the Right hand has no Fillets, as was anciently practiced, and which contain 20 in Number; the Flutings on the Left, are after the modern Manner, and contain 24 in Number.

PROB. XVI. *To divide the Flutes of the Dorick Shaft, after the antient Manner.*

Divide the Circumference of the Column into 20 equal Parts, and draw the Chord Line of each Part, on every of which, complete an equilateral Triangle; then on the Out-Angle of every Triangle, with the Radius of one Side, describe the Curve of each Flute.

PROB. XVII. *To divide the Flutes and Fillets of the Dorick Shaft, after the modern Manner.*

(1.) Divide the Circumference of the Column into 20, but by some 'tis divided into 24 Parts. (2.) Divide any one Part into 6 Parts, and with a Radius of 3 of those Parts, on every of the 20, or 24 Points describe the Flutes, which will leave between them the Fillets required.

### III. Of the IONIC ORDER.

PROB. I. *To proportion the Heights of the principal Parts of the Ionick Order,* Fig. I. Plate V.

PRACTICE. (1.) Divide *al*, a given Height, into 5 Parts, and give the lower 1, to the Pedestal, as in the preceding Orders. (2.) Divide *ag* the Remainder, into 6 Parts, the upper 1 Part *ad* is the Height of the Entablature, and *dg* the lower 5 Parts, of the Column.

PROB. II. *To proportion the Heights of the principal Parts of the Ionick Pedestal,* Fig. II. Plate V.

Divide the given Height in 4 equal Parts, give the lower 1 to the Plinth N; one third of the next to the Mouldings on the Plinth, including the Hollow on the Astragal, when used instead of a Caveto, (as is sometimes done); half the upper 1 to the Cornice *ya*, and the Remains to the Dado *ab*.

C

PROB.



PROB. III. *To proportion the Heights of the Members on the Plinth; and of the Cornice of the Ionick Pedestal, Fig. II. Plate V.*

(1.) Divide the Height of the Mouldings on the Base into 8 Parts; give the lower 1 to the Fillet M, the next 4 to the Cima recta L; the next 1 and a half, to the Astragal K; half the next 1 to the Fillet I, and the remaining 1 and a half to a Caveto, or Hollow as H. (2.) Divide  $ya$ , the Height of the Cornice into 3 Parts, and each Part into 4 Parts, then the Whole is in 12 Parts; give the upper 1 to the Regula A; the next 2 to the Caveto, or Cima reversa B; the next 3 Parts to the Fascia or Platband C; the next 3 to the Cima recta D, (which is often made an Ovolo,); the next 1 to the Astragal E, and the remaining 2 to a Caveto, or Cima reversa, as F.

PROB. IV. *To determine the Projections of the Dado, Base and Cornice of the Ionick Pedestal, Fig. II. Plate V.*

(1.) Divide the Height of the Plinth into three Parts, the upper 1 into 9, and the upper 1 of the 9 into 3; from the first of which draw the Line  $fc$ , cutting the central Line in  $c$ ; make  $xd$  the Projection of the Dado, equal to  $cz$ . (2.) Make  $gf$  equal to one third of the Plinth's Height, for the Projection of the Plinth and Cornice before the Dado. (3.) In any Place against the Dado, as at  $s$ , draw the Line  $rs$ , equal to  $fg$ ; which divide in 4 Parts; subdivide them again as by Inspection is shewn, and terminate every Member as expressed by the perpendicular dotted Lines proceeding from thence.

PROB. V. *To proportion the Heights of the principal Parts of the Ionick Column.*

Divide  $dg$ , Fig. I. Plate V. into 9 Parts, and take 1 Part for the Diameter of the Column at its Base. The Height of the Base is half a Diameter, as also is the Height of the Capital, including the Height of its Volute.

PROB. VI. *To proportion the Heights of the Members of the Base of the Ionick Column.*

Divide  $op$ , the given Height (Fig. II. Pl. V.) in 3 Parts; the lower 1, is the Height of the

Plinth S. Divide the upper 2 Parts in 9, the first 3 Parts is the Height of the lower Torus R; two thirds of the next Part, of the Fillet Q; the uppermost two and half, of the upper Torus N; which is made with a Bead under it, the half Part is given to the Bead, and but 2 to the Torus. The remaining half Part is given to the Fillet O. The Height of the Astragal with its Fillet, when used on the upper Torus, is equal to half the Height of the upper Torus, but when a Circure only is placed there, its Height is two fifths of the upper Torus.

PROB. VII. *To proportion the Heights of the Members of the Ionick Capital, Fig. II. Plate V.*

(1.) Divide  $vv$ , the given Height into three Parts, and half the upper 1 into 4 Parts, then the upper 3 Parts, is the Height of the Ovolo A, of the Abacus; and the lower 1 of the Fillet B. (2.) Divide  $ww$ , equal to  $\frac{2}{3}$  of  $vv$ , in 8 Parts; give the upper 1 and a half to the Caveto C; the next half to the Fillet D; the next 2 to the Ovolo E; the next 1 to the Astragal F, and the next half to its Fillet G; then the remaining two halves will be the Depth that the Volutes will descend. The Shaft of this Column is diminished at its Astragal, one sixth of its Diameter at the Base.

PROB. VIII. *To determine the Projections of the Members of the Base of the Ionick Capital, Fig. II. Plate V.*

(1.) Divide the Semidiameter  $iy$  in 3 Parts, and turn out 1 Part, for the Projection of the Plinth S, and Torus R. (2.) Divide the Projection of the Plinth before the Upright of the Column into three Parts, the first 1 terminates the Centre of the lower Torus, and the second of the Circure L, divide the middle Part in 4, half the first 1 terminates the Fillet Q, and half the last, the Fillet O. The Scotia P is described at large, as in Fig. III.

PROB. IX. *To determine the Projections of the Members of the Ionick Capital, Fig. II. Pl. VI.*

Place the Diameter of the Column at its Base divided into 60 Minutes, as is done between F and E, and continue it 15 Minutes both ways to Y and Z. This done, set 45 Minutes on each



## Of the IONICK ORDER.

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each Side the central Line which terminates the Ovolo A, in Plate V. Also set 40 Minutes on each Side for the Projection of the Fillet B; 38 for the Projection of the Caveto C, and 35 for the Ovolo E. The Projection of the Fillet G, is its own Height and two thirds thereof, over which the Astragal projects half its own Height. The next Thing in order to complete this Capital, is to describe its Volutes as following.

### PROB. X. To describe the Ionick Volute, Plate VII.

(1.) Divide *aX*, a given Height of a Capital into 3 Parts, and the upper 1 Part in 2 Parts at *c*, and proceed to complete all the Members as taught in the last Problem. (2.) On *p* the Center of the Astragal describe the Circle *ro x q* for the Eye of the Volute, through whose Center *p*, draw the perpendicular Line *na p q*, also the horizontal Line *rp s*, at right Angles thereto; and complete the Geometrical Squares *ro x q*; whose Sides divide each in two equal Parts at the Points 2, 1, 3, 4, and draw the Diameters 2, 4; and 1, 3; (3.) Divide each Semidiameter into 3 equal Parts, at the Points 6, 10; 5, 9; 11, 7; and 12, 8; then the Points 1 2 3 4 5 6 7 8 9 10 11 12, are 12 Centers on which the Out-line of the Volute is described; for the Point 1 is the Center of the Arch *nb*; the Point 2, of the Arch *be*; the Point 3, of the Arch *eg*; the Point 4 of the Arch *gb*; the Point 5, of the Arch *bk*, &c. (3.) Divide *WZ* in 4 Parts; the upper 1 equal to *na*, is the Breadth of the Lift; which divide in 12 Parts, of which make *bc* equal to 11; *ed* equal to 10; *gf* equal to 9; *hi* equal to 8; *kl* equal to 7, &c. still diminishing 1 at every Quarter. This done divide the Distance between every two Centers, as between 2 and 6; 1 and 5, &c. into 5 Parts, and the 12 outermost ones will be the 12 Centers, on which the inward Line of the Lift may be described, which from the Point *a* will pass through the Points *cdfil*, &c. and complete the Volute as required.

To make the *Ionick* Volute well understood, I have given the Plan of a Quarter Part of its Capital, Fig. III. Plate VIII. wherein observe; that as the Volutes are placed anglewise, or rather diagonally; therefore when we stand directly before a Column, though they are really circular, as in Plate VII, yet they will appear elliptical; as hav-

ing their Breadths foreshorten'd by being seen in an oblique View; and therefore when we make a Drawing of this Capital, the Volutes must be made elliptical, as in Fig. II. Plate VIII.

### PROB. XI. To divide the Flutes and Fillets of a round or square Ionick Column, Fig. III. Plate VIII.

First, Of a round Column, as the Quarter Part *MKI*; divide the Circumference of the Pillar into 24 equal Parts, and each Part into 8 Parts; with the Radius of 3 of those 8 Parts, on every of the 24 Parts, describe the Flutes, as before done in the *Dorick* Order.

Secondly, Of a square Column, as the Quarter Part *KAL*; divide each Semidiameter, or each Side of the Column, into 31 Parts, give 6 to each Flute, 2 to each Fillet and Bead at the Angles, when the Semidiameters are divided into 31 Parts; and 3 to each Flute, and 1 to each Fillet, and Bead, at the Angles, when a Side of the Column is divided in the same Number of Parts. On the Right Hand, at the lower Angle of Plate VIII, I have described the Bead *A* at large, by which the young Student may see that 'tis no more, than three fourths of a Circle inscribed in a geometrical Square.

As the Ovolo of this Capital is generally enriched with Eggs and Darts, commonly called Anchors, I shall therefore shew at large, the manner of describing them.

### PROB. XII. To describe Eggs and Darts for the Enrichment of an Ovolo, Fig. I. Plate VIII.

First, To proportion their Distances.

Divide the Height into 9 Parts, and at the Distance of 7 of those Parts, draw the central Lines of the Eggs and Darts.

Secondly, To describe an Egg, as Fig. B.

The Height of the central Line being divided in 9 Parts, with a Radius equal to 3 Parts, on the Point 6, the third Part from the Top, describe a Semicircle. On the Point 3, the third Point from the Bottom, with a Radius of 2 Parts, describe an entire Circle. Draw down the Lines 4 *a*, 4 *a*, each equal to 3 Parts, and through the Point 3, draw the Lines *ab* and *ac*. On the Points *aa*, with the Radius *ab*, describe the Side Curves, which will complete the Egg, as required.

Thirdly.



Thirdly, *To describe the inward Curve of the Husk, Fig. C.*

Draw the Lines  $4a$ ,  $4a$  as before, but make each equal to 2 Parts. Through the Point  $d$ , which is the Midst between the Points 3 and 4, draw the Lines  $ab$  and  $ac$  of Length at Pleasure. On  $d$  with the Radius of 3 Parts describe the Arch  $bc$ , and on the Points  $aa$ , with the Radius  $ab$ , describe the Arches  $ba4$  and  $ca4$ , which compleats the inward Line as required.

Fourthly, *To describe the outward Line of the Husk, Fig. D.*

Draw  $3a$ ,  $3a$  each 1 Part in Length, and through the Point  $b$ , which is the Midst between the Points 4 and 5, draw the Lines  $abc$ , and  $abd$ , of Length at Pleasure. On the Point  $b$  with a Radius equal to 4 Parts and an half describe the Arch  $cd$ . On the Points  $aa$ , with the Radius  $ac$ , describe the upper Side Curves, which completes the Out-curve as required.

Fifthly, *To describe a Dart.*

Divide one Part on each Side its central Line in 2 Parts, and from the angular Point of the Dart, draw the interior Lines; set 2 Parts up from the angular Point, and from that Point, draw Lines to 14 Parts Distance on the Top Line; also from the angular Point draw Lines up to 7 Parts on each Side its central Line. Then draw Lines from the angular Point to 1 Part on each Side its central Line, will complete a Dart as required. Fig. A represents the Lines of all these last Four Operations, compriz'd in one.

PROB. XIII. *To proportion the Heights of the principal Parts of the Ionick Entablature, Plate VI.*

Divide the Height  $ae$  into 10 Parts, give 3 to the Architrave, 3 to the Freeze, and 4 to the Cornice.

PROB. XIV. *To proportion the Heights of the Members of the Ionick Architrave, Plate VI.*

Divide  $df$  the Height, in 4 Parts; the first one is the Height of the lower Fascia R, and one third of the next Part of the Cima reversa Q; divide the upper Part in 3, give the upper third Part to the Tenia N, and the other 2 Parts to the Cima reversa, or Caveto O. The remaining one Part and two thirds is the Height of the upper Fascia P.

PROB. XV. *To proportion the Heights of the Members in the Ionick Cornice, Plate VI.*

(1.) The Height being in 4 Parts, divide the upper 1 in 4, and when the Cima recta B, has no Astragal under it, give the upper 1 to the Regula A, and 2 and two thirds to the Cima; but if an Astragal be introduced under the Cima, then give half the upper 1 to the Regula A; the next 2 and an half to the Cima recta B, and remaining two thirds of 1 to the Astragal on the Fillet C. (2.) Divide the second 1 Part in 4; give the upper 1 to the Cima reversa D, and the lower 3 to the Corona E. (3.) Divide the third 1, from the Top in 4, and the upper 1 thereof in 4; of which give the upper 1 to the Fillet F, and the other 3 to the Cima reversa G. The Depth of the Face of the Modillion is two Parts and an half. (4.) Divide the lower fourth Part in 2 Parts, and give the upper 1 to the Ovolo I: And the lower 1 divided in 5, give the upper 1 to the Fillet K, and other 4 to a Caveto or Cima reversa, L.

PROB. XVI. *To determine the Projections of the Members of the Ionick Architrave and Freeze.*

(1.) The Projection of the Tenia is equal to one fourth of the Height of the whole Architrave; and the great Fascia P, to one third thereof. (2.) The Projection of the Freeze is equal to that of the Architrave.

PROB. XVII. *To determine the Projections of the Members of the Ionick Cornice.*

The Projection of the whole Cornice is always equal to its whole Height, and its particular Members have their Projections determined as follows, viz. draw a Line as  $wx$ , equal to the Projection of the whole Cornice, which divide in 4 Parts; subdivide them again, and terminate each Member as exhibited by the dotted perpendicular Lines, which pass through the Divisions from the Profile to the Plan, or Planceer of the Cornice.

PROB. XVIII. *To describe the under Curvature of an Ionick Modillion at large, Fig. V. Plate XII.*

The Projection being found, as in the last Problem, which suppose to be  $rn$ , or  $x6$ ; divide it in



in 6 Parts. On the Point *w*, erect the Perpendicular *wv*, equal to 1 Part, and on the Point *z*, describe the Arch *1v*; on the Point *s*, erect the Perpendicular *5s*, equal to 2 Parts and an half; make *vz* equal to *5s*, and draw the Line *sz*. On the Points *s* and *z*, with the Distance *5s*, describe the compound Curve *v5*, which completes the Curve of its Planceer. The Breadth of the Face of a Modillion, is 10 Minutes, or one sixth Part of the Diameter of the Column at its Base. The Interval or Distance between them in a Cornice over Columns, is 25 Minutes, or  $\frac{1}{6}$  of a Semidiameter: But in a Cornice over Pillasters, which are not diminished, the Interval must be 30 Minutes or a Semidiameter, precisely. In the Plan of the Cornice Plate VI. *SS*, &c. represents the Planceers of the Modillions; and *TT*, &c. the Coffers or hollow Pannels enriched with Roses in the Intervals.

of the Torus *O*, and one third of the next half to the Fillet *N*; give the upper two thirds of the upper half, of the upper Part, to the Caveto *K*, and the other third Part, being divided in three Parts, give 1 to the Fillet, and 2 to the Astragal *L*. (2) Divide *de* the Height of the Cornice in 3 Parts, and the upper 1 in 6 Parts; of which, give the upper 1 and one third, to the Height of the Regula *A*; the next two Parts and two thirds to the Height of the Cima reversa *B*, and the next 1 Part to the Height of the Astragal *C*; divide the Middle Part in 2, and give the upper 1 to the Height of the Fascia or Platband *D*; and the lower 1 thereof divided in 3, give the upper 1 to the Fillet *E*. Divide the lower 1 Part into 2 Parts, and the lower 1 Part thereof in 3 Parts; of which give the upper 1, to the Height of the Astragal *G*; half the next Part, to its Fillet; and the Remainder to the Caveto *H*.

#### IV. Of the CORINTHIAN ORDER.

PROB. I. *To proportion the Heights of the principal Parts of the Corinthian Order.* Fig. I. Plate IX.

PRACTICE. (1.) Divide the given Height as *ck* in 5 Parts; and give the lower 1 Part *ik*, to the Height of the Pedestal. (2.) Divide *ci*, the remaining 4 Parts, in 6 Parts; the upper 1 *cd*, is the Height of the Entablature, and *fi* the lower 5, of the Column.

PROB. II. *To proportion the Heights of the principal Parts of the Corinthian Pedestal.* Figure II. Plate IX.

Divide *ot* the given Height in 4 Parts; give the lower 1 to the Height of the Plinth; one third of the next Part to the Height of the Members on the Plinth; and half the upper 1, to the Height of the Cornice.

PROB. III. *To proportion the Height of the Members on the Plinth, and of the Cornice of the Corinthian Pedestal.* Fig. II. Plate IX.

(1.) Divide *rs* the Height in two Parts, and the two upper halves of each, in 3 Parts; give the lower half of the first 1 Part to the Height

PROB. IV. *To determine the Projections of the Dado, Base and Cornice of the Corinthian Pedestal.* Fig. II. Plate IX.

(1.) Divide *st* the Height of the Plinth in nine Parts, and make *ba* the Projection of the Dado, equal to eight Parts. (2.) Make *yw* the Projection of the Plinth, and of the Cornice, equal to *xy* the Height of the Members on the Plinth; and at any Place against the Dado, as at *q*, draw the Lines *pq*, equal to *wy*; which divide in 4 Parts, and subdivide them again, in thirds, as exhibited; from whence determine the Projections of the Members on the Plinth, and of the Cornice, as by Inspection is shewn, by the perpendicular dotted Lines proceeding from thence.

PROB. V. *To proportion the Heights of the principal Parts of the Corinthian Column.* Figure I. Plate IX.

Divide *di* the given Height, into 10 Parts, and take 1, for the Diameter of the Column at its Base. The Height of the Base *bi*, is half a Diameter; and of the Capital *df*, one Diameter and one sixth



**PROB. VI.** *To proportion the Heights of the Members of the Base, of the Corinthian Column.*  
Fig. II. Plate IX.

(1.) Divide  $mn$  the given Height in three Parts, the lower 1 is the Height of the Plinth. (2.) Divide the Middle 1, in 5 Parts, and the fourth Part thereof, in 3 Parts; give the upper 1 Part thereof, to the Height of the Fillet F, the other two Parts, to the Astragal G; and the Remains of the Middle Part, to the Height of the lower Torus, H. (3.) Divide the upper 1 Part in 5; and the second and third Parts thereof, each in 3 Parts; give the upper third Part, of the second fifth Part, to the Fillet under the Astragal D; the next two Parts to the Astragal D, and the Remains upward, to the Torus C. The Height of the Astragal B and Cincture A, is equal to half the Height of the upper Torus, which divide in 3, and give 1 to the Cincture and 2 to the Astragal. The Scotia E is described at large, Fig. III. as follows. Divide the Height  $af$  in 7 Parts, through the third Part, draw  $ab$ ; make  $7b$ , equal to  $fg$ , and  $bc$  equal to  $bg$ ; and from  $c$ , to the Point 7, draw the Line  $ce$ . On the Point 7, describe the Arch  $ade$ ; and on the Point  $c$ , the Arch  $eg$ , which completes the Scotia.

*Note.* The Scotia of the *Ionick* Base, is best described by this Method.

**PROB. VII.** *To determine the Projections of the Members of the Base of the Corinthian Column.*  
Fig. II. Plate IX.

(1.) Divide the Semidiameter in 3 Parts, and turn out 1 Part, for the Projection of the Plinth and lower Torus. (2.) Divide the Projection of the Plinth before the Upright of the Shaft, into 5 Parts; then one Part and an half terminates the Projection of the Astragal G, and  $\frac{2}{3}$  of the next  $\frac{1}{2}$  of the Fillet F. The 3d Part terminates the Fillet under the Astragal D, and the Astragal B; and 3 Parts and an half, terminates the Cincture A.

**PROB. VIII.** *To proportion the Heights of the Members of the Corinthian Capital.* Plate X.

Divide  $ab$ , the given Height into 7 Parts; or 70 Minutes, (each Part being supposed to be divided in 10 Parts, which are Minutes. Then, to the Height of the first Range of Leaves, give 20 Minutes, to the second, 40 Minutes; to the third, 50 Minutes; and up to the Abacus

60 Minutes. Divide the Height of the Abacus in 2 Parts; give the lower 1, to the Caveto  $g$ , one sixth of the upper half to the Fillet  $e$ ; and the Remains is the Height of the Ovolo  $d$ . The Height of the Astragal  $bk$ , is 5 Minutes, which divide in 3, give 1 to the Fillet  $b$ , and 2 to the Astragal  $a$ .

**PROB. IX.** *To determine the Projections of the Members of the Corinthian Capital.* Plate X.

The better to explain this Capital, I have given a Quarter Part of its Plan, in two different Manners; as I have already done, of the *Ionick* Capital, viz. the one, of the fourth Part of a round Column; the other, of the like Part of a square Column; By which the Manner and Reasons of determining the Projections of the Members in the Profile, may the better be understood. To effect which, draw the Diameter of the Column at its Base, equally on each Side the central Line of the Capital; divide it in 60 Minutes, and continue out the same, 15 Minutes on each Side, as before done in the *Ionick* Order. As the Shaft of this Column is diminished one sixth of its Diameter at its Base, therefore from the fifth, and fifty-fifth Minutes in the Diameter, draw the Out-lines of the upper Part of the Shaft next the Astragal, and complete the Projection of the Astragal, which is 5 Minutes, and its Fillet two thirds thereof. On any Part of the central Line as at A, with a Radius equal to 25 Minutes, describe a Quadrant, which divide in 4 equal Parts, and from the three inward Divisions, draw Lines parallel to the central Line, as those dotted Lines on the Left Hand Side, which are the central Lines of the Leaves. Now the Distances and Heights of the Leaves being thus determined; proceed next to determine the Projection of the Abacus, as follows, viz. Make the Projection of its Ovolo  $d$ , equal to 45 Minutes, its Fillet  $e$ , 42 Minutes and an half, and its Caveto  $f$ , 40 Minutes. Lastly, From the Extream of the Abacus, to  $a$  the Extream of the Astragal draw a Line: as that dotted, which terminates, the Projection of the Leaves, in the Middle Range; and make the Projections of every other particular Part, as expressed by the dotted Parallels, proceeding from both Profiles, through the Scale of Minutes to the two Plans; which being very plain to Inspection need no further Explanation. The Number of Flutes and Fillets



## Of the CORINTHIAN ORDER.

II

Fillets in the Shaft of this Column, are the same as those in the *Ionick*.

PROB. X. *To proportion the Heights of the principal Parts of the Corinthian Entablature.* Plate XI.

Divide the Height *ab*, in 10 Parts, give 3 to the Architrave; 3 to the Freeze; and 4 to the Cornice.

PROB. XI. *To proportion the Heights of the Members of the Corinthian Architrave.* Pl. XI.

Divide *ef* the given Height in 5 Parts, and the lower 1 in 4; of which give the lower 3 to the first Fascia, and the upper one, to its Bead. The second Part of the Architrave's Height, is the Height of the second Fascia, and one fourth of the third Part, is the Height of its Cima. The remaining three fourths of the third Part, and three fourths of the fourth Part, is the Height of the upper Fascia; and the next one fourth Part of its Bead. The fifth or upper Part being divided in 4 Parts, and the third Part upwards thereof divided in 3, give the upper 4th Part, and one third of the next, to the Height of the Tenia; and the remaining two thirds and 2 Parts, to the Height of the Cima reversa.

PROB. XII. *To proportion the Heights of the Members of the Corinthian Cornice.* Plate XI.

(1.) Divide *cd* the given Height in 5 Parts, and the upper 1 Part in 4, of which give the upper 1 to the Regula: one third of the lower 1 to the Fillet under the Cima recta, and the Remains, to the Cima recta. (2.) Divide the 4th Part in 4; give the upper 1 to the Cima reversa; and the lower 3 to the Corona. (3.) Divide the third Part in 4, and its upper 1 in 4; of which give the upper 1 to the Fillet, and the lower 3, to the Cima reversa, which make the Capping of the Modillions, whose Depth terminates at half the first Part. (4.) Divide the second Part in 3, and the Middle 1 thereof in 3; of which give the first Part to the Fillet over the Dentules, and the remaining Part upwards to the Ovolo, under the Modillions. (5.) Give half the lower 1 in the second Part, to the Height of the Fillet, on which the Dentules are placed: Lastly, The first Part divided in 3, the upper 1

terminates the Depth of the Dentules; the next one third, of the Middle third Part, the Depth of the Denticule; and the remaining 1 Part and two thirds is the Height of the Cima reversa, of the Bed Mould.

PROB. XIII. *To determine the Projections of the Members in the Corinthian Architrave.* Pl. XI.

The Projection of the Tenia, is equal to 1 fifth and one fourth of a fifth of the Architrave's whole Height. The Projection of the Tenia, divided in 5, the first 2, terminates the Projection of the upper Fascia; and three fourths of the first Part terminates the Projection of the second Fascia.

PROB. XIV. *To determine the Projections of the Members in the Corinthian Cornice.* Plate XI.

The Projection of the entire Cornice, is equal to the whole Height, as expressed by the Arch *gk*. At any Place against the Freeze, as at *l*, draw a right Line, as *lm*, equal to *ik*, the whole Projection. Divide *lm* in 4 Parts, subdivide them again, and terminate each Member, as exhibited by the dotted perpendicular Lines which pass through the Divisions from the Profile to the Plan, or Planceer of the Cornice.

PROB. XV. *To describe the Corinthian Modillion at large.* Fig. I. Plate XII.

The Breadth of a Modillion is equal to one sixth of the Diameter, or 10 Minutes, and the Interval or Distance between them in a Cornice over Columns is 25 Minutes; but in a Cornice over Pilasters, undiminished, the Interval is 30 Minutes: And therefore the Distance between the central Lines of Modillions in the first, must be 35 Minutes, and 40 Minutes in the last.

As the Breadth of a Modillion in Front, as Fig. A. Plate XII, is thus determined; and as the Height and Projecture of its Profile, is determined in the last Problem, it therefore now only remains to shew, How to proportion the Parts into which they are divided, as follows:

I. *To proportion the Parts in the Front of a Corinthian Modillion.* Fig. A.

Divide the Breadth of the Front in 8 Parts, and



and give the outer 1 Parts, to the Fillets as C B, &c. Divide the last half of the fourth Part, and first half of the fifth Part, each into 4 Parts; give the two outer 1 Parts thereof to the Fillets, and the Middle 6 Parts, to the Astragal A.

II. To proportion the Parts in the Profile of the Corinthian Modillion. Fig. I. Plate XII.

Divide its Height in 8 Parts, and set seven of those Parts from 7 to *p*. From the third Part from *p*, draw the perpendicular Line *ce*, which intersect by a horizontal Line, drawn from 4 Parts and an half, reckon'd upwards in the Height of the Modillion; and the Point of Intersection is the Center of the Eye of the Volute, whose Diameter is equal to 1 Part. Within the Circle of the Eye, inscribe a geometrical Square as in Fig. II, and therein; inscribe another, as 4, 3, 1, 2, whose Diagonals divide in 4 Parts at the Points 8, 7, 5, 6. Then the Points 1, 2, 3, 4, 5, 6, 7, 8, are the Centers on which the large Volute is described. The Height *ki* of the small Volute *a*, is equal to half the Height of the Modillion; which divide in 8 Parts; and then setting 7 of those Parts from *k* to *l*, proceed in every Respect to describe that Volute, as you did the other.

To join these Volutes, draw the Line *ac*; bisect it in *b*; and again at *b* and *d*; on which Points erect the Perpendiculars, *bf* and *de* cutting the Perpendiculars *ef* and *ce* in the Points *f* and *e*, which are the Centers, on which the Curve *abc* is described. In the same Manner the Under-curve is described, whose Center is the Point *g*.

Fig. III. represents the Planceer of the Modillion; whose Breadth is equal to that, in Front, Fig. A, and Length to the Profile, Fig. I.

Divide the Side *e* 5, Fig. III. in 5 Parts; then 1 Part, is the Breadth of the Margin, about the Coffers Fig. IV; and half of 1 Part, equal to *ib*, Fig. IV; is the Projection of the Ovolo with its Fillet, that encompasses the Coffers. Make *lm* equal to *li*, and draw *mn*, which determines the Diameter of the central Enrichment; which may be, any Kind of circular Flower at Pleasure.

PROB. XVI. To describe the Dentules at large, as in the lower left Angle of Plate XI.

Divide the Height of the Denticule (which is

the Surface against which the Dentules are fix'd, when made in Wood) in 8 Parts, and give 1 to the Fillet, and 6 to the Depth of the Dentules; which last divide in 3 Parts; and give 2 to the Breadth of a Dentule, and 1 to the Breadth of an Interval. The Depth of the Fillet, or Eye-Dentule between, is one fourth of the Depth of a Dentule.

By the several dotted parallel Lines, proceeding from the Profile, to the Plan, the Construction of the Plan, is plain; and what has been said before, concerning the Planceer of the Modillion, and Coffer in Plate XII, is herein further exemplified, by the several Planceers, and Coffers between them; of the Modillions and their Intervals in the Profile above.

## V. Of the COMPOSITE ORDER.

PROB. I. To proportion the Heights of the principal Parts of the Composite Order. Fig. I. Plate XIII.

(1.) Divide *bm*, the given Height in five Parts, and give the lower 1, *bm*; to the Height of the Pedestal.

(2.) Divide *bb*, the remaining 4 Parts, into 5 Parts; give *be* the upper 1, to the Height of the Entablature; and *eb*, the lower 4, to the Height of the Column.

PROB. II. To proportion the Heights of the principal Parts of the Composite Pedestal. Fig. II. Plate XIII.

Divide the given Height *xq* into 4 Parts; give the lower 1, to the Height of the Plinth; one third of the second, to the Height of the Mouldings on the Plinth; and half the upper 1, to the Height of the Cornice.

PROB. III. To proportion the Heights of the Members on the Plinth, and of the Cornice, of the Composite Pedestal. Fig. II. Plate XIII.

(1.) Divide *ef*, the Height of the Mouldings on the Base, into 4 Parts: Give the lower 1 to the Torus N, and one third of the next, to the Fillet M; divide the upper 1 in 3; give the upper 2 thereof, to the Caveto I; and the other 1, to the Fillet K. The remaining one fourth



fourth Part and two thirds is the Height of the inverted *Cima recta* L.

(2.) Divide *e d* the Height of the Cornice in 6 Parts; give the lower 1 divided in 3, to the Caveto G and Fillet F; give the 2 next Parts to the *Cima recta* E and Fillet D, making the Fillet one sixth of the Whole; give the fourth Part and half the fifth Part, to the Fascia, or Platband C; and the remaining 1 Part and half, to the *Cima reversa* B, and its Fillet A, making the Fillet one third of the Whole.

PROB. IV. To determine the Projections of the Dado, Base, and Cornice of the Composite Pedestal Fig. II. Plate XIII.

The Projections of this Dado, Base, and Cornice, are found in the same Manner as those of the *Corinthian* Pedestal, in Prob. IV. of the *Corinthian* Order.

PROB. V. To proportion the Heights of the principal Parts of the Composite Column.

The Proportions of these Parts are the very same as those of the *Corinthian* Column, in Problem V. of the *Corinthian* Order.

PROB. VI. To proportion the Heights of the Members of the Base of the Composite Column. Fig. II. Plate XIII.

(1.) Divide *n p* the given Height in 3 Parts; the lower 1, is the Height of the Plinth I.

(2.) Divide the second Part in 5; give the first 3, to the Torus H; the next 1, to the Astragal G; and half the next to its Fillet F.

(3.) Divide the upper Part in 5; give the upper 2 and an half, to the Torus C, and the next half to the Fillet D; and the Remains, is the Scotia E. The Height of the Astragal B, and Cincture A, is 1 Part and an half, turned up, as signified by the dotted Semicircle, divided in 3, of which, the Astragal is 2, and the Cincture 1.

PROB. VII. To determine the Projections of the Members of the Base of the Composite Column. Fig. II. Plate XIII.

(1.) Divide *b c*, the Semidiameter of the Column in 3 Parts, and give 1 Part to the Projec-

tion of the Plinth, and Torus H. (2.) Divide the Projection of the Plinth before the Upright of the Column, into 5 Parts; the first 1 and an half, terminates the Astragal G; and the next half, the Fillet F. (3.) The third Part terminates the Fillet D, and Astragal B; and 3 Parts and an half, the Cincture A.

The Scotia at large, is described by the same Rule, as the Scotia of the *Corinthian* Base, in Prob. VI. of the *Corinthian* Order.

PROB. VIII. To proportion the Heights of the Members of the Composite Capital. Plate XIV.

The Heights of the Astragal, Leaves, and of the Abacus, are the same here, as before in the *Corinthian* Capital. The Height of the Volute *v d*, equal to 2 Parts and an half, divided in 8; give the upper half to the third Part, from *v*, to the Fillet; the fourth Part to the Astragal enriched with Pearls and Beads; and the next upper 2 to the Ovolo, enriched with Eggs and Darts.

PROB. IX. To determine the Projections of the Members of the Composite Capital. Plate XIV.

The Projections of the several Members of this Capital, are the same, as those of the *Corinthian*; as also is the Diminution of the Shaft; and the Proportion of its Flutes and Fillets.

This Capital is composed of the *Ionick* and *Corinthian* Capitals; for the Abacus, Ovolo, Astragal, Fillet, and Volutes, are the very Members that compose the *Ionick* Capital; and the two Heights of Leaves, and Astragal on which they stand, are the very same as those in the *Corinthian* Capital.

PROB. X. To proportion the Heights of the principal Parts of the Composite Entablature. Plate XV.

Divide the Height *a f*, in 10 Parts; give 3, to the Architrave; 3 to the Freeze; and 4 to the Cornice.



PROB. XI. *To proportion the Heights of the Members of the Composite Architrave.* Plate XV.

Divide  $eg$  in 4 Parts, the lower 1, is the Height of the lower Fascia; and one third of the next 1, of its *Cima reversa*. Divide the upper 1, in 4; give the upper 1 thereof, to the Height of the Fillet on the Tenia; the next 2 to the Ovolo; one third of the next 1 to the Fillet; the remaining two thirds to the Caveto, and the intermediate 1 Part and two thirds is the Height of the Fascia next under it.

PROB. XII. *To proportion the Heights of the Members of the Composite Cornice.* Plate XV.

(1.) Divide  $bc$  the Height in 4 Parts, and the upper 1 Part in 4 Parts; of which give its upper 1 to the Regula  $E$ ; the lower third Part of the lower 1 to the Fillet, and the intermediate Space to the *Cima recta*, between them.

(2.) Divide the third Part in 4; give the upper 1 to the *Cima reversa*; and the lower 4 to the Corona.

(3.) Divide the second Part, in 3, and its upper 1 in 4; give the upper 2, to the Ovolo, and the next 1, to the Fillet, which caps the Modillions.

Half the lower third Part, is the Height of the *Cima reversa*, between the upper and lower Modillions.

(4.) Divide the lowest fourth Part of the Height, in 4; give the lower half to the *Cima reversa*  $C$ ; and the other half being divided in 2, give the upper 1 and two thirds of the next, to the Height of the lower Modillion.

The Height of the Astragal  $cd$  is equal to half the Height of the *Cima*, over them; which divide in 3; give 2 to the Astragal, and 1 to the Fillet.

PROB. XIII. *To determine the Projections of the Members of the Composite Architrave* Pl. XV.

The Projection of the Tenia, before the Upright of the Freeze, which stands over the Upright of the upper Part of the Shaft of the Column, is equal to one fourth of the Height of the whole Architrave. Divide  $op$  the Projection of the Tenia, in 3 Parts, give the first one to the Projection of the upper Fascia; and three fourths of the next 1, to the Projection of the Fillet over the Caveto.

PROB. XIV. *To determine the Projections of the Members of the Composite Cornice.* Plate XV.

The Projection  $DE$  of the whole Cornice, is equal to  $DC$  its entire Height. Against any Part of the Freeze, as at  $m$ , draw a Line  $mn$ , equal to  $DE$ , which divide in 4 Parts; subdivide them again, and terminate each Member, as exhibited by dotted perpendicular Lines; which pass through the Divisions from the Profile to the Plan, or Planeeer of the Cornice.

The Breadth of the upper Modillions is one sixth of the Diameter of the Column, at its Base or 10 Minutes, and the Interval between them being twice their Breadth, or 20 Minutes; therefore the central Lines of every 2 Modillions is half a Diameter, or 30 Minutes; as the Modillions are in the *Ionick* Cornice.


When the young Student hath passed through all the preceding Operations, he will be enabled not only to understand every Part of an Order, by Inspection, without having any Recourse to this explanatory Part again: But will also understand the Proportions of all the following Designs by Inspection, the very Instant that he casts his Eye on them.



CHAP. II.

Of the Intercolumnation or proper Distance that the Columns of every Order are to be placed at, in the forming of Designs, for Frontispieces, Doors, Windows, &c.

*Note,* That herein I account the Distance or Intercolumnation, from the central Line of one Column, to the central Line of the other; and not from the Outside of the one, to the Outside of the other, as many Persons have done.

I.  THE Distance of *Tuscan* Columns in Pairs is one Diameter 45 Minutes; but when single, in Frontispieces, 4 Diameters; and in Arcades, they may extend from 5 to 7 Diameters, where Necessity requires it, making the Arch a Semi-Ellipsis, instead of a Semi-circle; but 6 Diameters is the usual and proper Distance for an Arcade.

II. The Distance of Columns in the *Dorick* Order, is regulated by the Number of Triglyphs that is to be between them. For as the Breadth of a Triglyph is 30 Minutes, and the Breadth of a Metope, or Distance between two Triglyphs is 45 Minutes, and as a Triglyph is always placed over the central Line of every Column: Therefore it follows, that to have 1 Triglyph between those over two Columns, the Distance must be 2 Diameters, 30 Minutes; that is, 60 Minutes, or 1 Diameter, for the two half Triglyphs over each Column, and the whole Triglyph between them; and 90 Minutes or 1 Diameter and an half, for twice 45 Minutes, the Breadths of the two Metopes. So in like Manner to have two Triglyphs between; the Distance must be 3 Diameters, 45 Minutes; to have 3 Triglyphs 5 Diameters, which *Vitruvius* calls *Aræostyle*; and to have 4 Triglyphs, 6 Diameters, 15 Minutes, which last is used in Colonades, and Arcades; and that of 5 Diameters for Doors, &c.

III. The Distance of Columns in the *Ionick* Order is regulated by the Number of Modillions, which are placed over Columns, the same as the Triglyphs in the *Dorick* Order. And as the Distance of the central Lines of *Ionick* Modillions, in a Cornice over Columns has been shewn to be 30 Minutes or half a Diameter, therefore the Distance between Columns in this Order to have two Modillions between, which is the least that can be; to have the Columns clear of each other, must be 1 Diameter and an half; to have 3 Modillions between, 2 Diameters and an half; to have 5 Modillions between, 3 Diameters; which last being doubled, is used in Arcades; and that of 2 Diameters and an half doubled, for Doors, &c.

The Distance of *Ionick* Pilasters not diminished, must be greater than of Columns, because the central Lines of their Modillions, are at 35 Minutes Distance; and therefore it follows, that to have two Modillions, between, the Distance must be 1 Diameter 45 Minutes; to have three Modillions between, two Diameters and 20 Minutes; to have four Modillions between, two Diameters 55 Minutes; and to have five Modillions between, 3 Diameters 30 Minutes, &c.

IV. The Distance of Columns in the *Corinthian* Order, is also regulated by the Number of Modillions between them; and as in Prob. XV. of the *Corinthian* Order, the Distance of their central Lines are 35 Minutes, which is the same Distance,



Distance, as the Modillions in the *Ionick* Cornice over Pilasters; therefore the Distances of *Corinthian* Columns, must be the same, as of *Ionick* Pilasters. And as the Distance of the central Lines of *Corinthian* Modillions, in a Cornice over undiminished Pilasters, is also shewn in Problem XV. of the *Corinthian* Order, to be 40 Minutes; therefore it follows; That to have 2 Modillions between, the Distance must be two Diameters; to have three Modillions between, two Diameters 40 Minutes; to have four Modillions between, three Diameters, twenty Minutes, &c.

V. The Distance of *Composite* Modillions in a Cornice over Columns, is the same as in the *Ionick* Order; therefore the Distance of *Composite* Columns and Pilasters are the same, as of *Ionick* Columns and Pilasters.

The Manner of proportioning the several Orders, and determining the proper Distances they are to be placed at, being thus explained; I shall now proceed to give such Explanation of the following Plates, as will render the Business of every Design easy and delightful to every one, who has made himself a Master of the Precedent Orders.

Plate XVI, XVII, XVIII, XIX, XX.

### Of PIERS for GATES.

To make these, and all other Designs contained in this Work, easy to the Understanding of all Capacities, and to enable such, to work them, of any Magnitude required; I have to every Design affixed Scales of Aliquot Parts, (which never was done before by any Master) whereby, having only, the Height of any Work to be made (which in all Cases must be given); the Whole may be performed with the utmost Exactness as required.

*As for Example; Let it be required to proportion the Pier G, Plate XVI. to any given Height.*

Divide the given Height (suppose ten Feet) into four equal Parts (as signified by the Scale on its Left Side) give two thirds of the lowest 1 Part to the Height of the Subplinth G; and two

thirds of the other third Part, to the Height of the Plinth, Torus, and Fillet. Divide the upper fourth Part, in 3 Parts; and the upper 1 Part thereof in 3 Parts; of which, give the upper 2 Parts to the Height of the Capital; whose Members are above described at large by Fig. B. By the dotted Arch of a Quadrant in the Subplinth G, it is evident, that the Breadth of the middle projecting Part of the Pier, is equal to the Height of the Subplinth, which Breadth divide in 4; and give 1 to the Projection of each Side.

The Height of the Subplinth of the Pine Apple on the Capital, is one Part, and one third, as signified by the dotted Semicircle: And the Height of the Pine Apple and its Pedestal, is determined by the Interfection of Arches described on the extrem Points of the Capital's Projection, and which being divided in 3 Parts; and the lower 1 in 3, &c. give to every particular Member, its respective Height, as exhibited. The Projection of the Plinth to the Pedestal of the Pine Apple, is two thirds of the Projection of the Middle Part of the Pier.

Now the young Student is to observe; that as the constituent Parts of all the Designs in this Work, are adjusted in the very same Manner, as those of the above Example; which it is manifest are no sooner seen, but understood; it is therefore evident, that to say any Thing further relating thereto, is needless.

These five Plates contain eighteen Designs of Piers for Gates at Entrances into Gardens, Avenues, Courts, Palaces, &c. which may be built either of Stone or Brick, or of both, intermix'd, at the Pleasure of those for whom they may be erected.

Plate XXI, XXII, XXIII, XXIV, XXV.

### GATES for Entrances into Palaces, &c.

Five Designs for Gates, of which the first, second, third, and fourth, are according to the *Tuscan*, *Dorick*, *Ionick* and *Corinthian* Orders; whose respective Imposts and Architraves, of their Arches are described at large, and proportioned by Aliquot Parts, at the Bottom of each Design; as likewise is, the Impost and Architrave to the Gate, Plate XXV. made for an Entrance to the House of a private Gentleman, &c.

Plate



# Of FRONTISPIECES for DOORS to Mansion Houses. 17

Plate XXVI, XXVII, XXVIII, XXIX, XXX, XXXI, XXXII, XXXIII, XXXIV, XXXV, XXXVI.

## FRONTISPIECES for DOORS to MANSION-HOUSES, &c.

These Eleven Plates contain twenty-two Designs of Frontispieces for Doors, of which the first two, Plate XXVI, are composed of Chamber'd Rusticks; and proper for Entrances into Buildings that have Porticoes before them, to carry off the Rains, which themselves cannot do. The next two Designs Plate XXVII, are also rusticated; the one B, as the preceding; the other with square Rusticks, and being both crowned with Pediments are thereby made fit to adorn the Entrance of any Building without a Portico; As also, are all the Designs with Pediments in the following Plates. And when it happens, for Want of a proper Height, that a Pediment cannot be made; then in all such Cases the Cornice must break forward, and be supported by Trusses, as A, Plate XXVIII, XXXI, XXXII, to carry off the Rains. It also very often happens, that even when Frontispieces may be finished with Pediments, that the Projection of the Pediment will not be sufficient to protect the Entrance from the Insults of Rains; therefore in such Cases, the Pediments must advance forward, and be sustained either by Trusses, as exhibited in Plate XXX, XXXI, or by Pilasters, or Columns, as in Plate XXXIII, XXXIV, XXXV, XXXVI.

As I have finished the greatest Part of these Designs with Pediments of all the Varieties of the Orders, I shall in the next Place shew

*How to find the different Curvatures of Raking Mouldings of Pediments, and Modillions.* Plate XXXVII.

(1.) Let  $tl$ ,  $vb$ , be the upper Fillet or Regula, and  $wc$ ,  $no$ , the lower Fillet, of a level Cima Recta of a Cornice, also  $kl$ ,  $gb$  be the Raking Regula or upper Fillet; and  $ic$ ,  $mz$  the lower Fillet of the Raking Cima Recta, and let  $abc$ , be the Level Cima Recta given, whose Heights is  $ac$ , and Projection  $ab$ . Divide  $ac$  into any Number of equal Parts, suppose 8, and draw the Ordinates  $1p$ ,  $2p$ ,  $3p$ , &c.

(2.) On any Part of  $gb$ , as at  $e$ , raise a Perpendicular as  $ef$ , to the Height of the Raking Cima, which divide in the same Number of equal Parts as  $ac$ , as at the Points  $1$ ,  $2$ ,  $3$ , &c. from which draw Ordinates  $1p$ ,  $2p$ ,  $3p$ , &c. each respectively equal to the Ordinates in the Cima A, and then tracing the Curve  $dpp$ , &c.  $f$ , it will be the true Curve of the Raking Cima.

(3.) Suppose the Point  $g$  Fig. C, to be the utmost Point of Projection, in the Return of the Raking Cima, in an open Pediment.

Draw  $gb$  parallel to  $wc$ , and from  $b$  draw the Perpendicular  $bi$ , which divide in eight equal Parts at the Points  $1$   $2$   $3$ , from whence draw the Ordinates  $1p$ ,  $2p$ ,  $3p$ , &c. equal to the Ordinates  $1p$ ,  $2p$ ,  $3p$ , &c. in Fig. A. From the Point  $g$ , through the Points  $ppp$ , &c. trace the Curve  $gpp$ , &c.  $i$ , which is the true Curve of the returned Cima, as required.

Fig. DEF is a second Example of an Ovolo, wherein the three several Heights are all equally divided into the same Number of Parts, and the Ordinates of every one are respectively equal.

Now what is here said with Respect to the Raking Members of a Pediment, is to be also understood of the Members of Raking Modillions. For if Fig. E, or Fig. B, be consider'd as the Front Moulding, then the Figures F and D, or C and A, are the Moulds or Curvatures of the two returned Mouldings.

For this excellent Method I am greatly obliged to the ingenious Mr. ROBERT HARTWELL, at the Tower of London, Carpenter.

## Plate XXXVIII.

*To describe the Curvature of a Truss, for the Support of a Cornice, &c.*

(1.) Divide the given Height into eleven equal Parts; divide the upper three Parts in seven Parts, and make  $ne$  the perpendicular Line of the Projection of the upper Volute to eight of those Parts: Also, divide the third and fourth Parts of its Height in seven Parts; and make the Projection of the lower Volute equal to eight of those Parts.

(2.) This done proceed in every Particular to describe the two Volutes, and the Curve  $ecg$ , as directed in Sect. II. Prob. XV. of the *Corinthian* Order, to describe the Volutes or Scrolls of

G

the



the *Corinthian* Modillion. Fig. B represents the Eye of a Volute, with its Centers at large; and Fig. A, the Face or Front of a Truss; which divide in eight Parts, give the outer ones to the two Fillets; the middle one, to the Astragal, and its Fillets; and the Remainders on each Side, to the two Cima Recta's.

Plate XXXIX, XL.

*Of Attick Windows, whose Diameter and Heights are equal.*

These two Plates contain ten Windows, for Attick Stories, which are differently adorned, the first two having Window Stools, the one with plain Brick Work, the other with an Architrave expressed at large, by Fig. G, whose Breadth is equal to one sixth of the Window. The other eight, are also adorned with Architraves, square and knee'd, entire and broken, or interspersed with Rustick Blocks, on Stools, supported by Trusses, of which Fig. C, D, E, F are four Varieties.

Plate XLI.

*Of Windows whose Heights are equal to the Diagonal of a geometrical Square, whose Side is equal to the Diameter of the Window.*

This Plate contains four Designs, viz. two square-headed, proper for an Attick Story, also one semi-circular, and one semi-elliptical headed, for Chambers next under them.

Plate XLII, XLIII, XLIV, XLV, XLVI, XLVII, XLVIII, XLIX, L, LI, LII, LIII.

*Of Windows for State Rooms, and their Enrichments.*

As these Sort of Windows are sometimes enriched with an Entablature, and plain Architrave only, as those in Plate XLV, XLVI; or have their Architraves interspersed with Rusticks as A, Plate XLIV, &c. I have therefore precedent to them, given three Varieties of Entablatures, fit to be placed over Windows, viz. Fig. A, B, Plate XLII, and B, Plate XLIII, as also for Variety sake the Block Cornice A, which when practised, must be placed on Champhered

Rusticks, as in B, Plate XLVI. Plate XLVII contains a *Dorick* and *Tuscan* Window, the first with Columns, the other with Pilasters, (whose Flutings I shall presently shew, How to describe.) Plate XLIX contains an *Ionick* and *Corinthian*; and Plate L, two *Composite* Windows, which six last are of all others the most magnificent that can be made, except those which are called *Venetian* Windows, of which I have given three Varieties, viz. *Tuscan*, *Dorick* and *Ionick*, in Plate LI, LII, LIII, and which are most proper for a grand Stair-Case, Saloon, Library, Chancel of a Church, &c. where much Light is required; or for a Dining Room, &c. whence fine Views may be seen.

Plate LIV.

*Of circular and elliptical Windows.*

This Plate contains five Varieties of circular Windows, and one ovalar, differently adorned with Architraves and Rusticks; which are proper for Attick Stories, or in Tympanums of Pediments, &c.

*To describe an Oval Window of any Breadth and Height, this is the Rule.*

Draw the two Diameters at right Angles, each of their assigned Length. Set half the short Diameter from  $f$  the End of the long Diameter to  $k$ , and divide the Remains of the Center  $b$ , in three equal Parts, and set one Part from  $k$  to  $i$ . Make  $bg$  equal to  $bi$ , and complete the two equilateral Triangles  $gai$ , and  $gni$ . On the Centers  $g$  and  $i$ , with the Opening  $if$ , describe the Arches  $d fm$  and  $le n$ , and on the Centers  $a n$  with the Opening  $a m$ , describe the Arches  $m o l$ , and  $n b d$ , which completes the Oval, as required.

Plate XLVIII.

*To describe the Flutes and Fillets of Pilasters, and to represent the perspective Appearances of Flutes and Fillets of Columns.*

EXAMPLE I. *To divide the Flutes and Fillets of any Pilaster, Fig. A.*

Draw a Line at Pleasure, as  $h l$ , and therein set 29 equal Parts of any Magnitude at Pleasure, and



and complete the equilateral Triangle  $A b l$ , set the given Breadth of the Pilaster, suppose  $i k$ , from  $A$ , to  $i$ , and from  $A$  to  $k$ , then drawing Lines from  $A$  to the first one, the next three, the next one, the next three, &c. in the Line  $b l$ , they will divide the Line  $i k$  into its Flutes and Fillets, as required.

EXAMP. II. *To divide the Flutes and Fillets with Beads at the Angles, of any Pilaster, as Fig. B.*

Draw a Line as  $m p$  at Pleasure, and therein set 31 Parts as before, and then completing the equilateral Triangle  $B m p$ , proceed in every Respect, as in the preceding Example. And here note, That when the Lines representing the Flutes and Fillets of a Pilaster are thus drawn, on a Draught Board, &c. from those Lines, the Flutes and Fillets of all other Pilasters of greater Diameter may be readily found. As for Example: Suppose the Lines  $b f$  and  $a d$ , Fig. A were the Diameters of two other Pilasters. On any Point, in any Side, suppose on  $b$ , with an Opening equal to  $b f$ , describe the Arch  $g e$ , cutting the Side of the Pilaster in  $f$ ; then drawing the Line  $b f$ , the several Flutes and Fillets first drawn, will divide that Line in the same Proportion; and so the Line  $a d$  the Diameter of the lesser Pilaster.

The Lines  $r t$  and  $q s$ , Fig. B, express the same, in that Pilaster which hath Beads at its Angles.

*To represent the perspective Appearances of Flutes and Fillets in the Shafts of Columns, Fig. C, D.*

By Prob. XI. of the *Ionic* Order, describe the Flutes and Fillets in each Semicircle  $a g c$ , and  $c b d$ , from whence draw perpendicular Lines, which terminate with Arches, as  $x x x$  &c. and the Whole will be completed, as required.

Plate LV, LVI, LVII.

Of NICHES.

These three Plates contain six grand Designs for Niches, of the *Tuscan*, *Dorick*, *Ionick*, *Corinthian* and *Composite* Orders, whose Cavities, though here represented semicircular, may be made semi-elliptical at Pleasure, when required; and as the working of the Heads of Niches, semicircular,

semi-elliptical, may be performed two different Ways, which are very curious, I shall therefore now explain those Operations as follows:

Plate LVIII, Fig. K.

*To form the Head of a semicircular and semielliptical Nich, by divers Thicknesses of Plank, &c. glew'd together.*

(1) On the Surface of a flat Pannel, &c. large enough to contain something more than the Plan of the Nich, describe a Semicircle, as 1 2 3, &c. 14, 5 d Fig. K, of the same Diameter, as that of the Nich. Take the Thickness of your Plank, &c. in your Compasses; and set that Distance on the Semidiameter  $a a$ , from  $a$  to  $c$ , from  $c$  to  $e$ , &c. and through the Points  $c e g i$ , &c. draw Lines parallel to the Diameter  $1 a d$ . Take a Piece of Plank, as Fig. A, and with a Square, applied to its Edge about the Middle of its Length, as at  $a$ ; draw a Line, from the under to the upper Surface; the Extrems of which, are two Centers; on which you are to describe two Semicircles; the under one with the Radius  $a 1$ ; the upper one with the Radius  $c 2$ . With a turning Saw cut obliquely through the two Semicircles; and then you will have done the first Thickness. Take a second Piece of Plank, as Fig. B; draw a Line on its Edge near its Middle, square to both Surfaces; whose Extrems are two Centers as before. On the under Center thereof, with the (last) Radius,  $c 2$ , describe a Semicircle equal to the last (because the under Surface of this second Piece, is to be glew'd on the upper Surface of the first) and on its upper Center, with the Radius  $e 3$ , describe a Semicircle on the upper Surface; then cutting through both Pieces as before; the second Piece is done.

(2.) Proceed in like Manner until the Whole is complete; the Operations of which are expressed by the several Semicircles 3, 3: 4, 4: 5, 5: &c. in the Figures C, D, E, F, G, H, I, K, L, M, N, O, which represent the several Pieces of Plank as their respective Heights above the Base  $1 a d$  approach the Zenith of the Nich.

(3.) Glew all these Thicknesses, one on the other; and with a Compass, smoothing Plain, whose Arch is something quicker than that of the Nich, clear off and finish the Inside.

(4.) An



(4.) An elliptical headed Nich may be formed in the same Manner, as the preceding; if Semi-Ellipses are described on the Surfaces of the Thicknesses; as the Semicircles aforesaid.

*To find the long Diameter of the several Semi-Ellipses.*

As they diminish from the Base of the Nich to its Zenith; describe an Ellipsis equal to the Plan, or Face of the Nich; divide its Height into Thicknesses, and drawing Lines through the several Points of Divisions, parallel to its longest Diameter, until they meet the Curve of the Front, in the same Manner, as in the preceding Fig. K; they will be the long Diameters required.

*To find their respective semi-short Diameters.*

Describe a Quadrant, whose Radius is equal to the Height of the semi-elliptical Head of the Nich. Divide one of its Sides, into the same Number of Parts, as the Number of Thicknesses in the Height. From those Parts or Divisions, draw Ordinates to the Limb; which are the semi-short Diameters, respectively proportionate to the long Diameters before found.

The Heads of Niches are sometimes formed by Ribs, as Fig. IV, where A is the Plan, and B the Elevation, of the Ribs, for a semi-circular headed Nich.

The Mould, by which these Ribs are made, is the Arch of a Quadrant, *ab*, Fig. III; or the Arch *ab*, the half Front of Fig. B. When the Heads of Niches are thus formed, they are either lathed or plastered within Side, or lined with thin Deal or Wainscot; which last, if performed in a neat Manner, has a very good Effect, and may be thus performed.

*To cut out the Lining, for the Head of a semicircular Nich.* Fig. I. Plate LVIII.

Let the Semicircle *b 4 8*, represent the Plan of the Head of a semicircular headed Nich, which divide in 16 Parts, and through every other Part draw the Lines *A z*, *B z*, *C z*, &c. making their Lengths *B a*, &c. equal to the Length of the Arch *b 4*; or half the Circumference of the Nich's Head.

Complete the Circle *1 6 b*, *4 p*, and draw the Diameter *4 16*, at right Angles to the Diameter

*b z 8*. Divide the Semidiameter *z 16*, in eight Parts, and through them draw the Lines *b p*, *i q*, *k r*, &c. and on the Points 9, 10, 11, &c. with the Radius *9 p*; *10 q*; *11 r*; &c. describe Semicircles, as *o g 10 w*; *n f z v*, &c. and divide a fourth Part of each, as *g 10*; *f z*, &c. into 4 equal Parts. On the Point G, with a Radius equal to the Length of the Arch *o 16*, or *16 w*, describe the Arch *a 17 b*, also with Radius's the Lengths of the Arches *16 n*; *16 m*; *16 l*; *16 k*; *16 i*; *16 h*; describe the Arches *d 18 c*; *e 19 f*; *b 20 g*; *k 21 i*, &c. On the Arches *ab*, *dc*, *ef*, &c. set off one fourth Part of the Arches *g 10*, *f z*, &c. from the Points 17, 18, 19, &c. to the Points *ab*; *dc*; *ef*; *hg*; *ki*; &c. through which, Lines being traced, from the Point G, to the Points 6 and 7; the Part *G 6 7*. will be an eighth Part completed. In the same Manner complete the other 7 Parts, *A B C*, &c. and when bent into their Places, they will exactly complete the Lining of the Head of the Nich, as required.

*Note*, In very large Niches, the Number of Parts may be increased from 8 to 12, 16, 20, &c. at Pleasure.

Fig. II. is the Plan of the Head of a semi-elliptical Nich, composed of Ribs for Lath and Plaster, whose Bases are represented by *abcd ef*. The Front of this Nich, is the very same Semi-Ellipsis, as the Plan *a fg*. But the several Ribs, which stand on the Plan to form the Head, are different, as being all Quarter Parts of Ellipses whose longest Diameters are less; excepting the Front Rib, that stands over the Base *fb*, which is the fourth Part of a Circle, whose Radius is *fb*.

To form the Curves of the Ribs, to stand on the Parts *b c d e*, consider their Bases *b b*, *c b*, *d b*, and *e b*, as half the long Diameters of so many Ovals, and *fb* is half the short Diameter to every one of them in general. Then by the Rule given in Plate LIV, to describe an ovalar Window of any Breadth and Height; describe the Curves for the several Ribs required; which are no more than the Quarter Parts of so many complete Ovals.

Plate LIX, LX.

Eight Designs for Marble Cisterns, for Buffets, Side Board Tables, &c.

Plate



PLATE LXI, LXII, LXIII, LXIV, LXV, LXVI, LXVII, LXVIII, LXIX, LXX, LXXI, LXXII, LXXIII, LXXIV, LXXV, LXXVI, LXXVII, LXXVIII, LXXIX, LXXX, LXXXI, LXXXII, LXXXIII, LXXXIV, LXXXV, LXXXVI, LXXXVII, LXXXVIII, LXXXIX, XC, XCI, XCII, XCIII.

*Of Chimney Pieces, and their Enrichments.*

In these thirty-three Plates, there are sixty-three of the best Designs for Chimney Pieces, and their Ornaments (containing great Variety of Tabernacle Frames, Shields, Festoons, &c.) that have been yet published by any one Master in *Europe*, if not in the whole World.

PLATE XCIV, XCV, XCVI, XCVII, XCVIII, XCIX, C, CI, CII, CIII, CIV, CV.

*Of Pavements, Frets, and Gulochi's.*

Twenty-seven Designs of Marble Pavements, for Halls, Baths, &c. the last nine of which, are environ'd with thirty-six Varieties of Frets, Gulochi's and Borders, which in general may be as well applied for Borders to Pavements, as to enrich the Planceers of Architraves, or other Ornamental Parts of Architecture, wherein they are commonly introduced, and more particularly such that may be view'd from a Gallery.

PLATE CVI, CVII, CVIII, CIX, CX, CXI.

*Of Altar Pieces.*

Six Altar Pieces, of which the first two are for Chapels, and the others for Churches.

PLATE CXII, CXIII, CXIV, CXV, CXVI, CXVII.

*Of Pulpits.*

Six Designs for Pulpits, which in general have their Plans, Types and Members represented at large; which the ingenious Workman may perform with Pleasure.

PLATE CXVIII, CXIX, CXX, CXXI, CXXII.

*Tables for Monumental Inscriptions.*

Twenty-two Designs for Tables of Renown, for perpetuating to Posterity, the Memoirs of worthy Persons deceased.

PLATE CXXIII, CXXIV, CXXV, CXXVI, CXXVII, CXXVIII, CXXIX, CXXX, CXXXI, CXXXII, CXXXIII, CXXXIV, CXXXV, CXXXVI.

*Of Monuments.*

Twenty-one Designs for Monuments, enriched with Vases, Bas-relievo's, Busto's, &c. from which the ingenious Workman may receive such Hints, as to invent others innumerable.

PLATE CXXXVII *Of Tombs.*

Here, for Variety sake, I have given a Plan, and two Elevations, by which 'tis evident, that these Kinds of Tombs are nothing more than regular Pedestals, crowned with large Tables for Inscriptions.

To make these Tombs truly grand, they should be ascended by three Steps, giving to the upper Step a Breadth at least double that of the others.

In Plate CXXXII is shewn, how much an Object appears less, as 'tis elevated above the Eye. Suppose the Object D, whose lower Part is level with the Eye  $k$ , be raised from  $a$  to  $c$ ; then its real Height  $cd$ , will appear to the Eye at  $k$ , to be no higher than  $fg$ ; because  $kg$  and  $ka$  are equal; and  $fg$  is seen under the same Angles as  $dc$ .

To make a Monument, &c. placed on the Point  $c$ , appear of equal Height, with a Monument view'd level with the Eye as D; draw the Lines  $io$   $k$ ;  $5$   $k$ ; and  $c$   $k$ . On the Point  $k$  with any Radius, describe an Arch as  $xxzz$  at Pleasure. Make the Arch  $xz$ , equal to the Arch  $zz$ , and from  $k$  through the upper  $x$ , draw the Line  $kxhe$ ; then the Height  $ec$ , equal to eight Feet is the Height required, at fifteen Feet above the Eye; that shall appear equal to five Feet, view'd level with the Eye. For as the Angle  $ekc$ , is equal to the Angle  $io$   $k$   $5$ ; and as  $ec$  is perpendicular over  $ab$ , therefore the Height  $ec$ , though three Feet more than  $ab$ , will appear to the Eye at  $k$  to be but of the same Height of  $ab$ , viz. five Feet.

As very often it is required to erect Monuments in Churches, at some considerable Heights above the Eye; I therefore, for the sake of *Masons*, thought it necessary to demonstrate the preceding, that they might avoid Errors in proportioning such Works for the future.

PLATE CXXXVIII. *Of Obeliskes.*

Here I have given four Varieties of Obeliskes, viz. Fig. A. whose Base is a geometrical Square; Fig. B. an equilateral Triangle; Fig. C. an Octagon; and Fig. D. a Circle.

PLATE CXXXIX, CXL. *Of Time Pieces.*

Two Time Pieces for the Inside of Churches; as against a Gallery, &c.

PLATE CXLI, CXLII, CXLIII, CXLIV, CXLV, CXLVI, CXLVII.

Frames for Marble Tables in Rooms of State, &c.

Ten Designs for the Feet and Frames of Marble Tables, after the *French* Manner.

PLATE CXLVIII, CXLIX.

*Of Marble and Stone Tables for Grotto's and Arbors in Gardens.*

Here are four Varieties of Tables, and as many of their



their Pedestals, whose Plans explain the Figures to be circular, octangular, hexangular and square.

PLATE CL.

*Of Christening Fonts for Churches, and their Pedestals.*

Four Fonts for the Baptism of Children in Churches, which to be grand, should be erected on a spacious Ascent of three Steps, that thereby, during the Performance of Baptism, the Priest may be elevated above the Congregation.

PLATE CLI, CLII.

*Pedestals for Sun-Dials, and Busto's.*

The first six Pedestals are designed for Horizontal Sun-Dials, which, when erected, should be elevated about three Steps from the Ground; whereby they will be less liable to be displaced by Accident, and thereby rendered useles. The last four Pedestals are designed for Busto's, placed in Buildings or Gardens.

PLATE CLIII, CLIV, CLV, CLVI.

A Chest of Draws, a Medal Case, a Cabinet of Draws, and a Dressing Table enriched after the French Manner.

PLATE CLVII, CLVIII, CLIX, CLX, CLXI, CLXII, CLXIII, CLXIV.

*Eight Designs for Book Cases.*

PLATE CLXV, CLXVI, CLXVII, CLXVIII, CLXIX, CLXX, CLXXI, CLXXII, CLXXIII, CLXXIV, CLXXV, CLXXVI, CLXXVII, CLXXVIII.

Fourteen Designs for Ceilings, with great Variety of Enrichments; wherein is contained, for the Use of Carpenters, the Manner of forming Angle Brackets, for a Plaister Cove of a Cornice, as follows:

I. *To form the Curve of the Angle Bracket A, for a Plaister Cove, Plate CLXV.*

Let B be a front Bracket, standing at the Angle  $a$ , whose Projection is equal to  $ac$ ; and when up in its Place will stand over the Line  $ac$ ; for which Reason I call it, the Base of that Bracket. Draw  $ab$ , the Base of the Angle Bracket, and divide  $ac$  and  $ab$ , the two Bases, each in the same Number of equal Parts; suppose, 6, 8, 10, &c. as at the Points 1, 3, 5, &c. From the Points 1, 3, 5, &c. draw Ordinates, perpendicular to the two Bases, as  $cf$ ; 1, 2;

3, 4; 5, 6; &c. and make the Ordinates 1, 2; 3, 4; 5, 6; &c. on  $ab$  the Base of the Angle Bracket, equal to the Ordinates 1, 2; 3, 4; 5, 6; &c. on  $ac$ , the Base of the front Bracket. Then fixing Nails in the Points  $g$  2 4 6, &c. to  $a$ ; bend a thin Lath of equal thickness to them, and trace the Curve  $g$  2 4 6, &c.  $a$ , which is the Curve of the Angle Bracket, for the Cove as required.

II. *To form an Angle Bracket for a Plaister Cornice Fig. A. Plate CLXVIII.*

Let  $bfb$   $a$ , be a front Bracket,  $da$  its Height;  $db$  its Projection, and the Line  $ea$  its Base, when erected in its Place, at the Angle  $a$ . Draw  $na$ , the Base of the Angle Bracket, and raise the Perpendiculars  $a$ ,  $s$ ; and  $n$ ,  $r$ ; each equal to  $da$  the Height of the front Bracket. From the Points  $f$  and  $b$ , draw down the Lines  $fi$ ,  $bk$ , and continue them to  $ml$ . Draw  $mq$ , and  $lo$ , parallel to  $nr$ . Make  $lo$ , equal to  $kb$ ; and  $mq$  equal to  $if$ . Then drawing the Lines  $ao$ ,  $op$ ,  $pq$ , and  $qr$ , the Angle Bracket will be finished, as required.

*Note*, That a Bracket for an external Angle has no Difference from a Bracket for an internal Angle, the Backing only excepted; the Back of the former having its Angle convex; and the latter (if strictly performed, which is seldom done) concave to its central Line. And what is here said for finding the Curve or Form of a Bracket at a right Angle; is to be also observed and practised for finding the Curve or Form of a Bracket at any acute or obtuse Angle whatsoever, after having found the Base Lines of the Front and Angle, over which the two Brackets are to stand, when in their Places, as  $ea$ , and  $na$ , in the last Example.

PLATE CLXXIX, CLXXX, CLXXXI, CLXXXII, CLXXXIII, CLXXXIV, CLXXXV, CLXXXVI.

Twenty-two Designs for Iron Works of the most exquisite Taste, from which many curious Enrichments may be composed, for the Embellishments of Cabinet Works, Ceilings, &c.

In Plate CLXXIX, Fig. A contains four Varieties of Pannelling for Balconies; and Figures B and C are two Varieties for square Pannels to Gates, &c.

In Plate CLXXX is four Varieties of Raking Pannels for Stair Cases; and in Plate CLXXXII is three other Varieties for the same Use.

Plate CLXXXI, contains five Varieties of pannelling for Iron Gates; and Plates CLXXXIII, CLXXXIV, CLXXXV, CLXXXVI, four grand Designs, for Iron Piers, with their Gates and Ornaments.

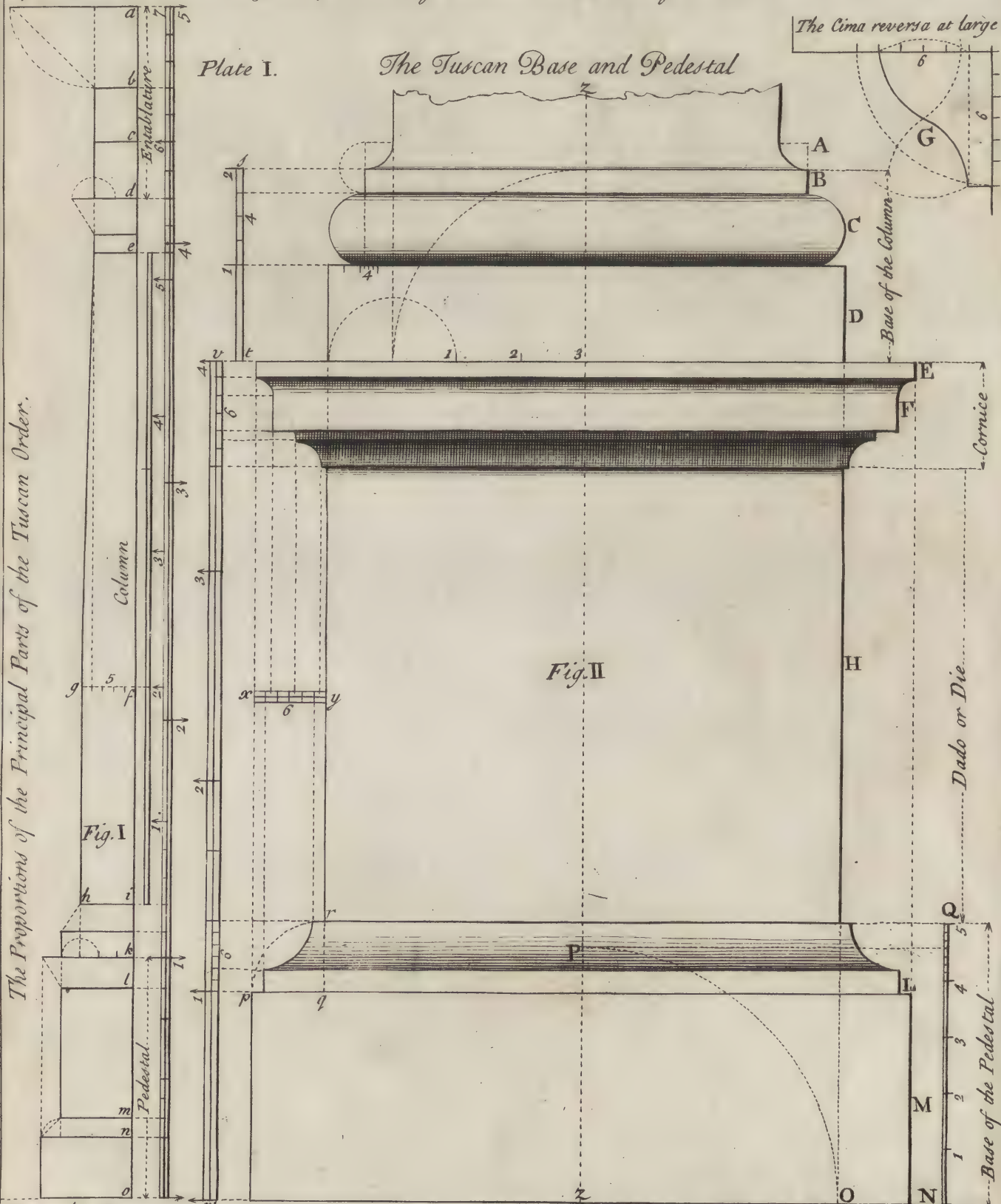
ADDENDA, of Fourteen Plates of ROOFS, &c.

F I N I S.



# Introduction

Before the young Student can proceed to the Art of making Designs of the Ornamental Parts of Buildings. He must understand, How to Proportion the five orders of Columns; and that this Work may not be dependant on any other for that Purpose, I shall therefore first Explain, the manner of Proportioning them at large by equal Parts in a more Concise, but full and easy Manner than has been yet done.



The Proportions of the Principal Parts of the Tuscan Order.

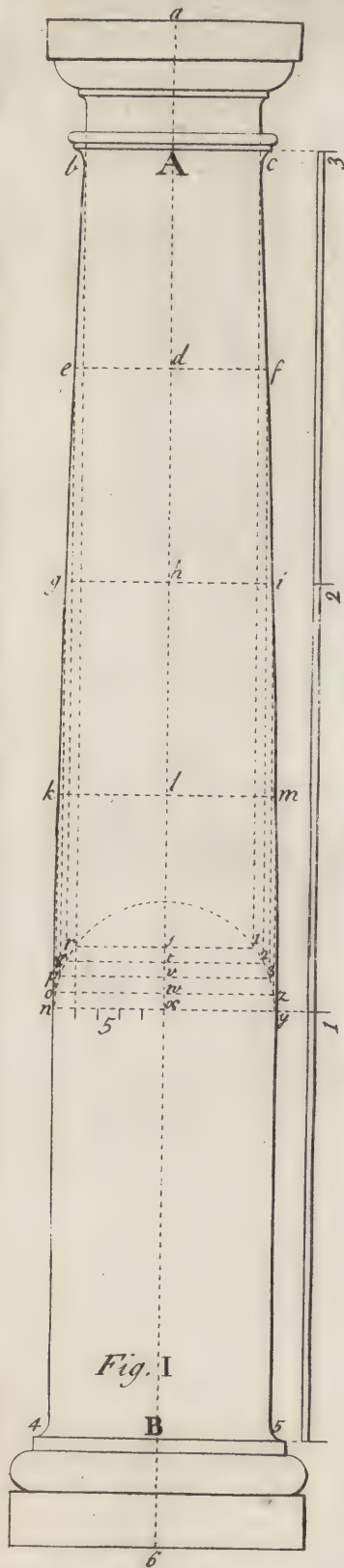




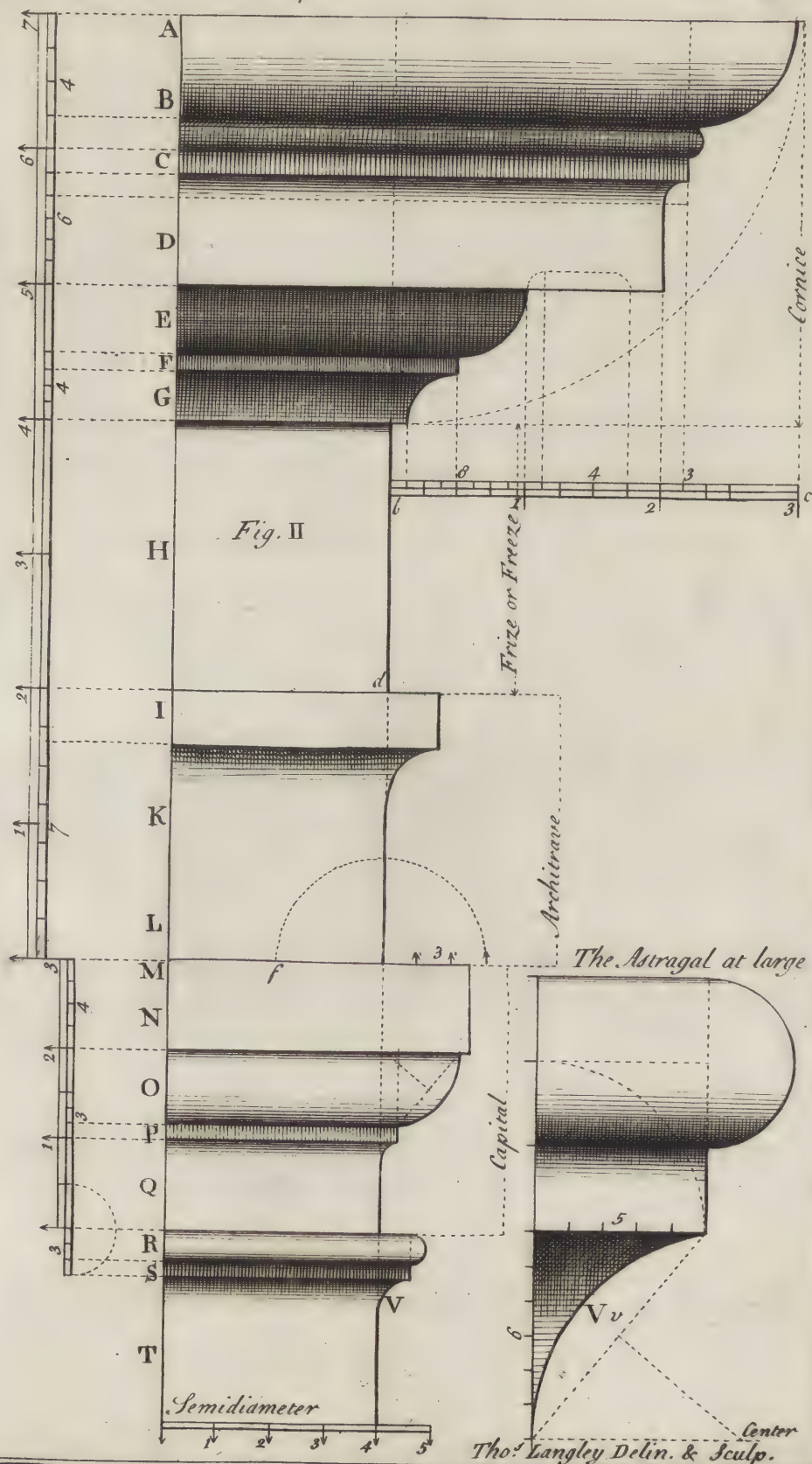


*The Tuscan Entablature and Capital.*

*Plate II.*



*Fig. I*



*Fig. II*

*B. Langley Invent 1738.*

*Tho: Langley Delin. & Sculp.*



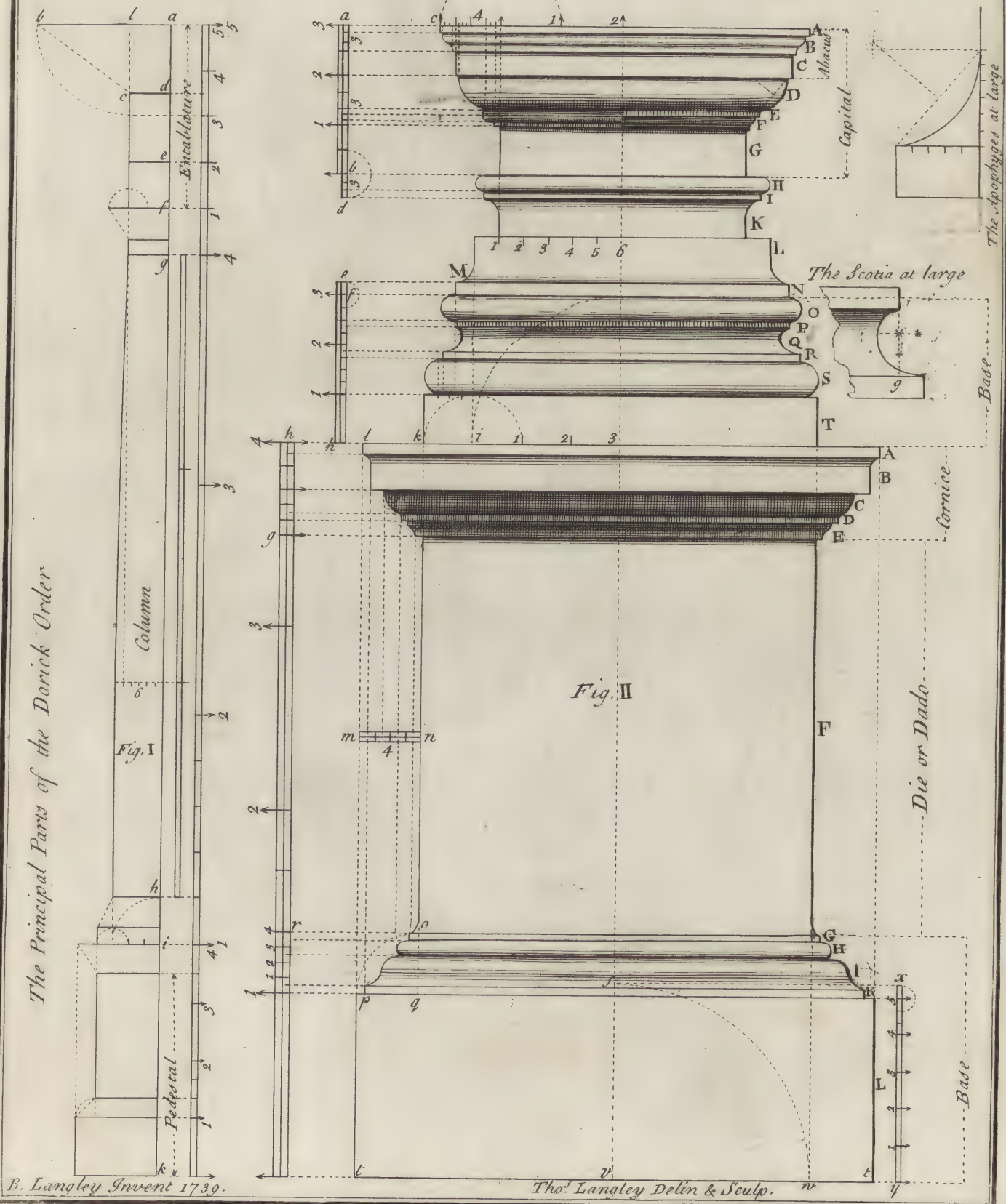




The Dorick Capital Base and Pedestal at large

Plate III.

The Principal Parts of the Dorick Order



B. Langley Invent 1739.

Tho<sup>s</sup> Langley Delin & Sculp.

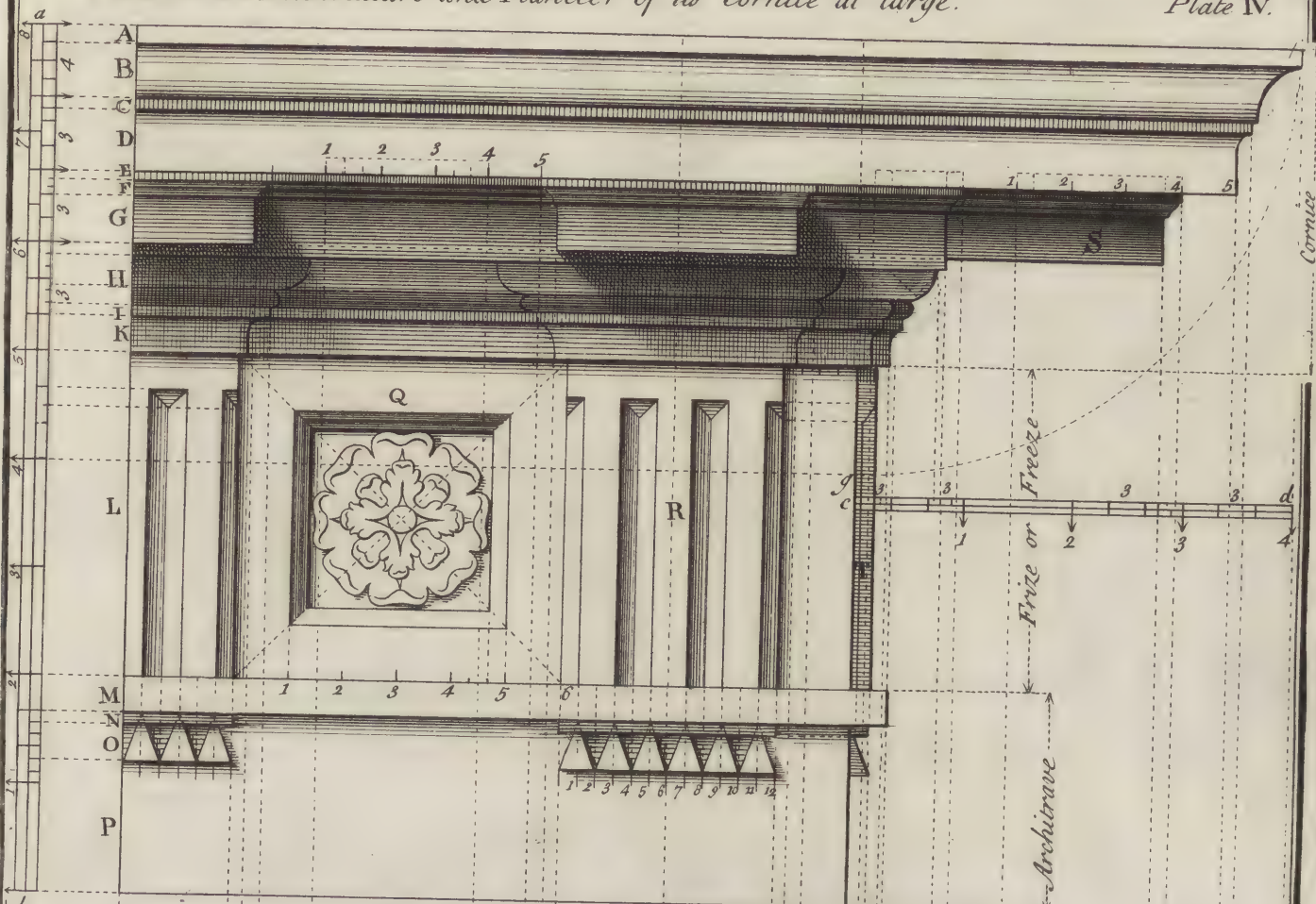




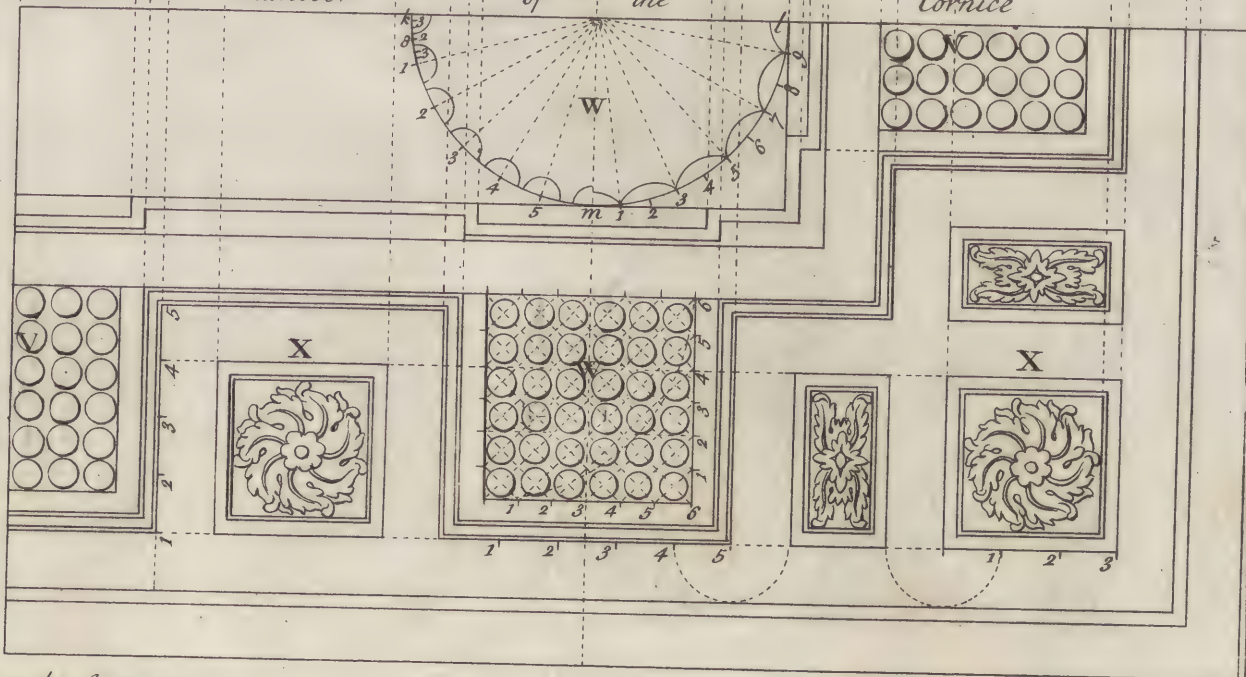


*The Dorick Entablature and Planceer of its Cornice at large.*

*Plate IV.*



*The Planceer of the Cornice*

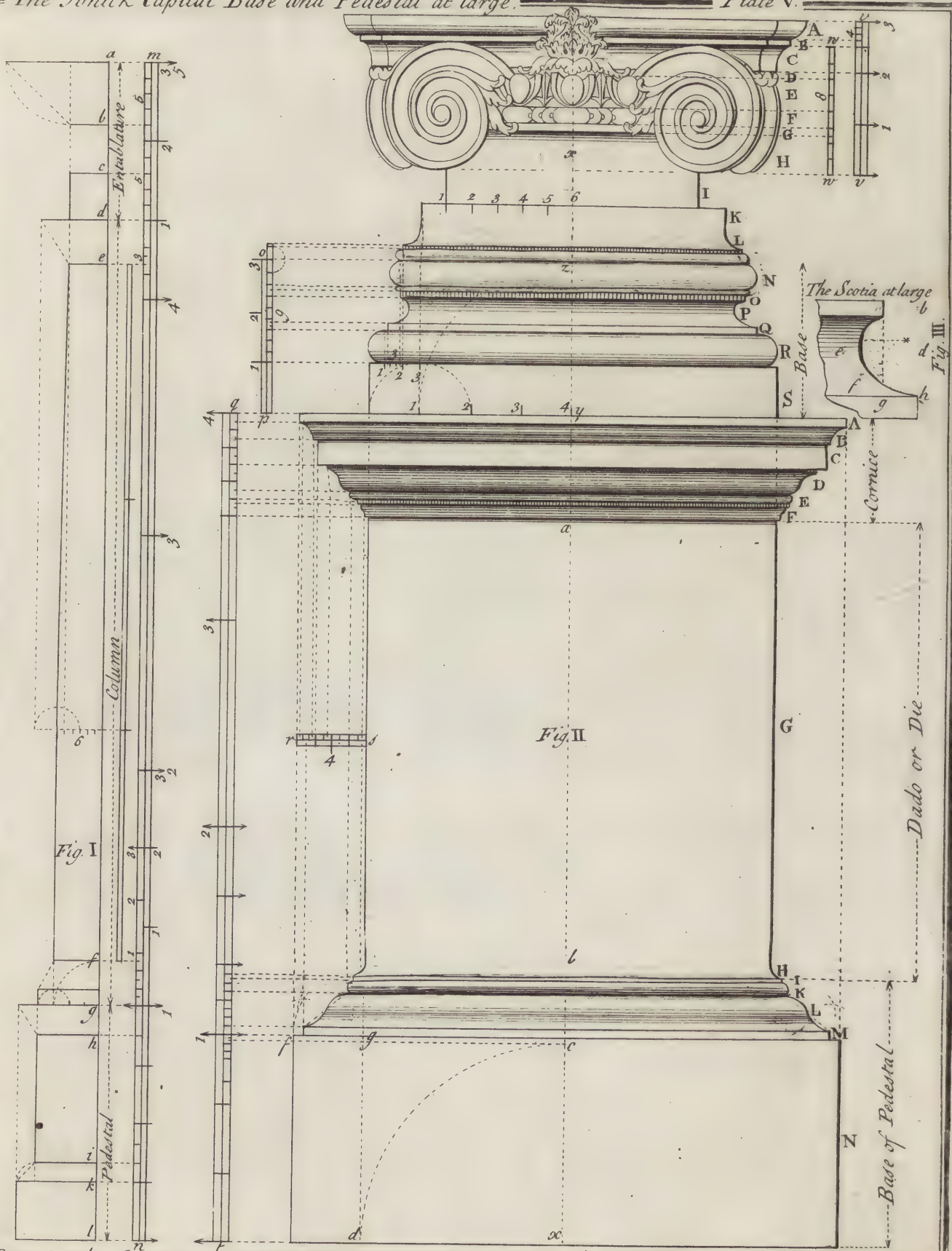








The Proportions of the Principal Parts of the Ionick Order.



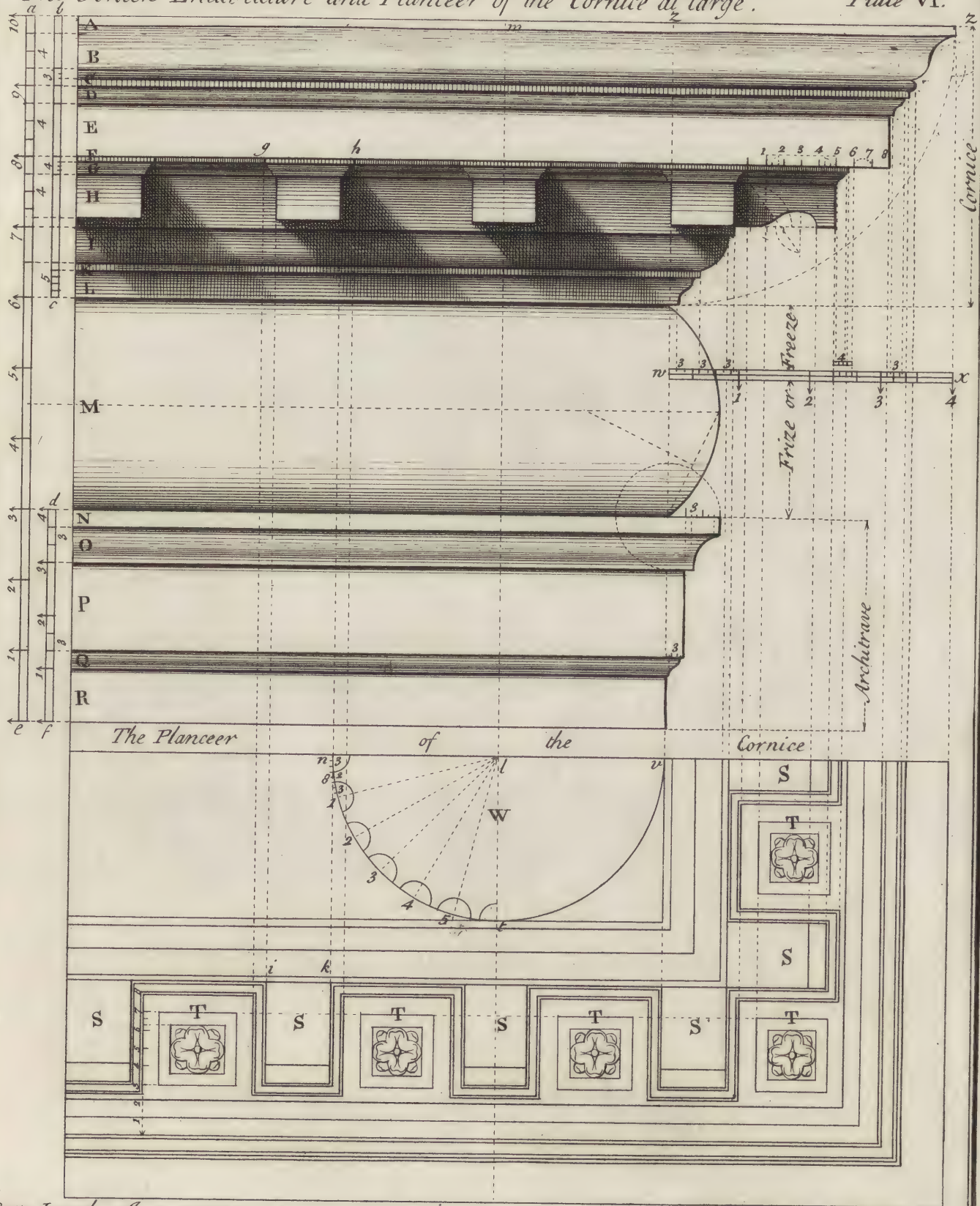






*The Ionick Entablature and Planceer of the Cornice at large.*

Plate VI.



*Batty Langley Invent 1759.*

*Tho. Langley Delin. & Sculp.*

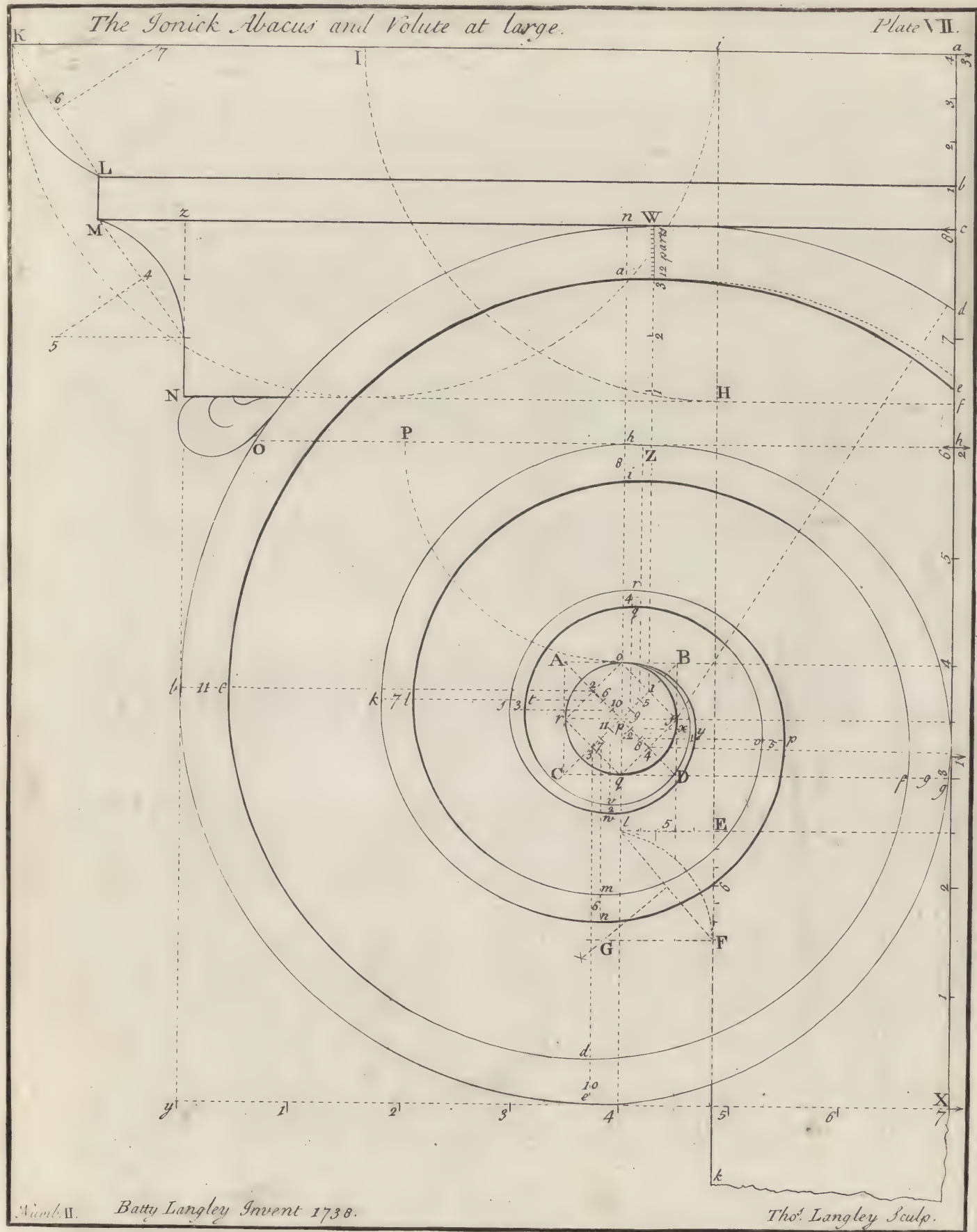






The Ionick Abacus and Volute at large.

Plate VII.



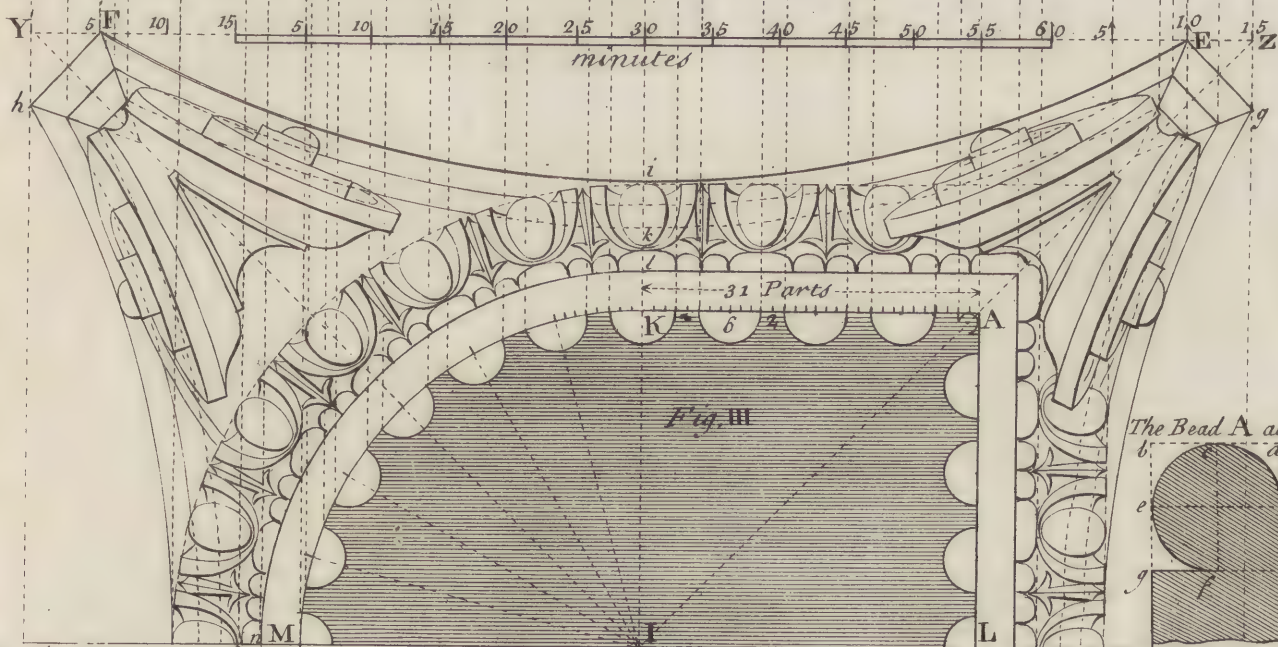
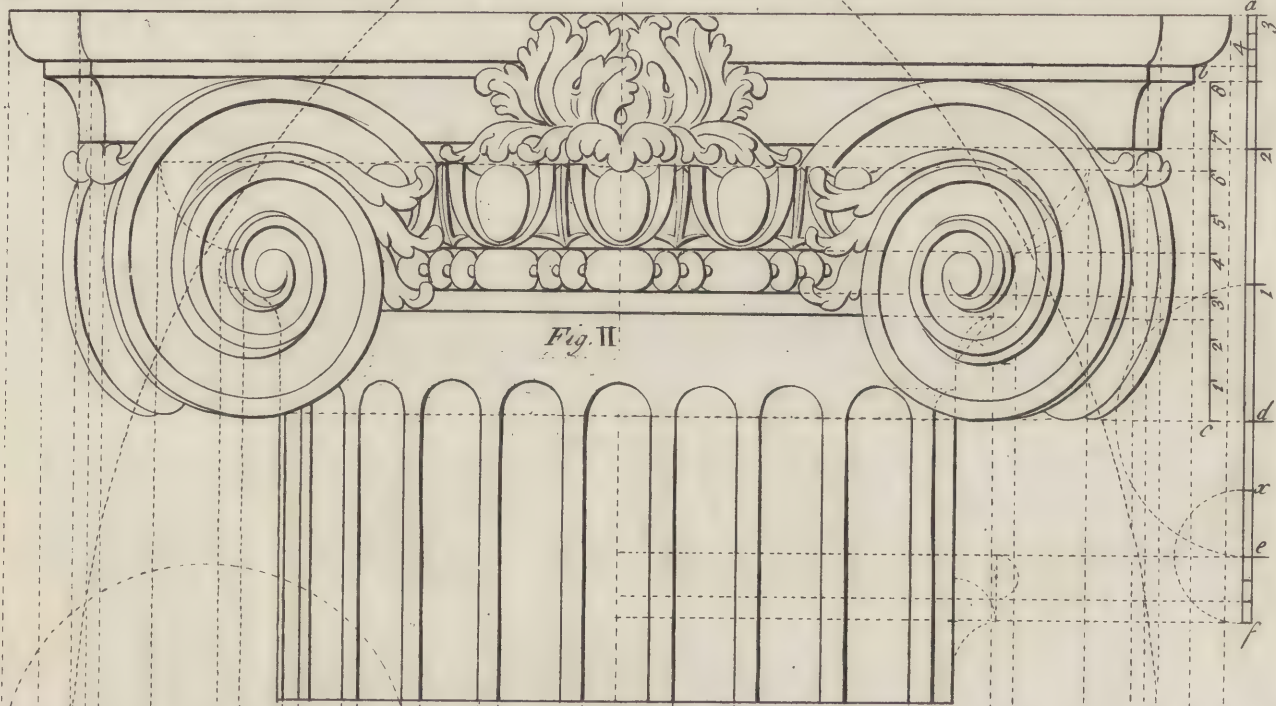
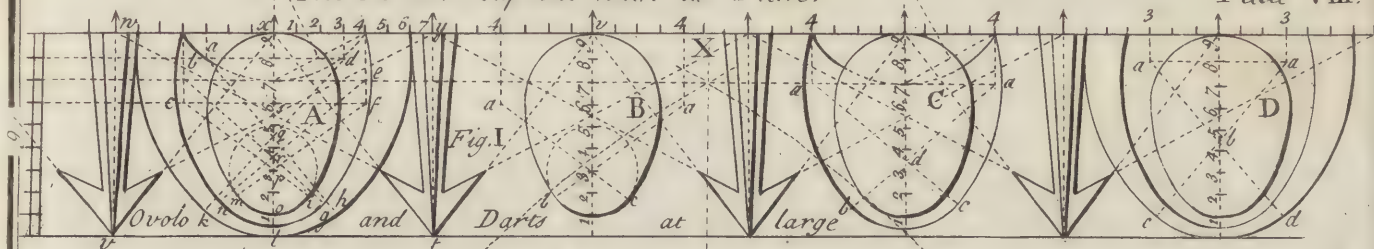




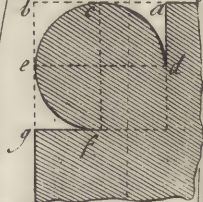


The Ionick Capital with its Plan.

Plate VIII.



The Bead A at large



The Plan of one quarter of a Capital to a Column.  
Batty Langley Invent. 1730.

The Plan of one quarter of a Capital to a Pillaster.  
Tho<sup>s</sup>. Langley Delin. & Sculp.



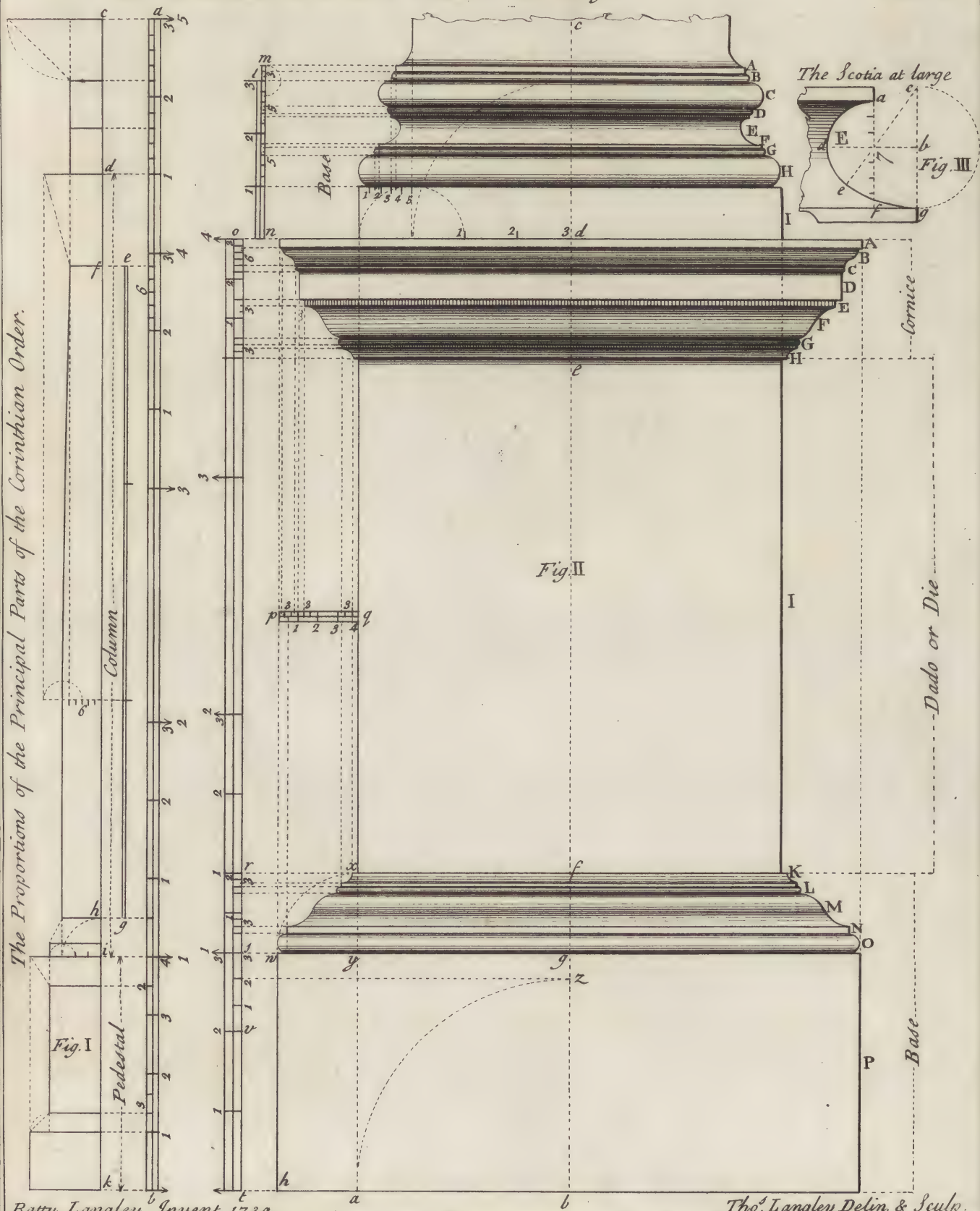




The Corinthian Base and Pedestal at large.

Plate IX.

The Proportions of the Principal Parts of the Corinthian Order.



Batty Langley Invent 1739.

Tho<sup>s</sup> Langley Delin. & Sculp.

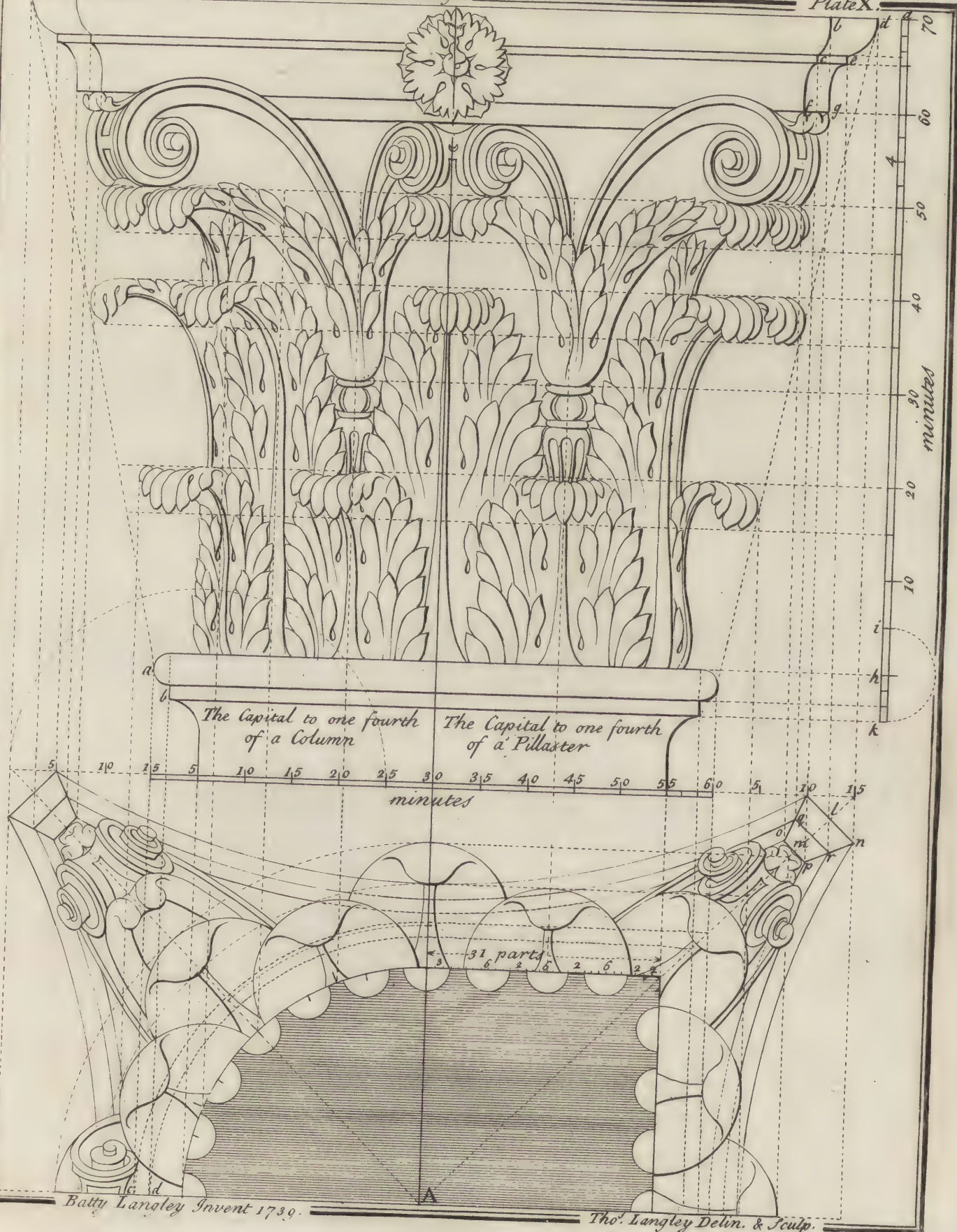






The Corinthian Capital with its Plan at large.

Plate X.



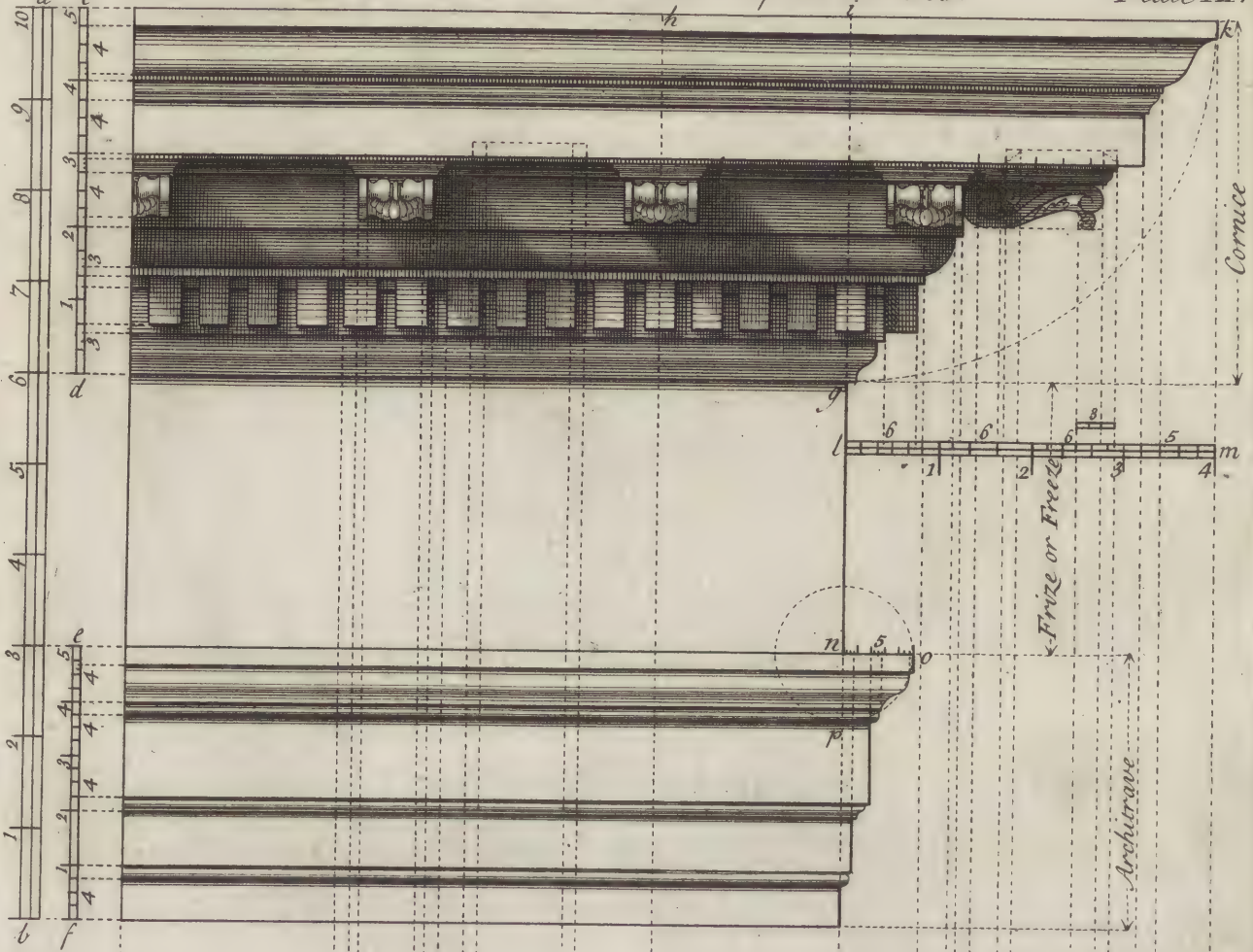




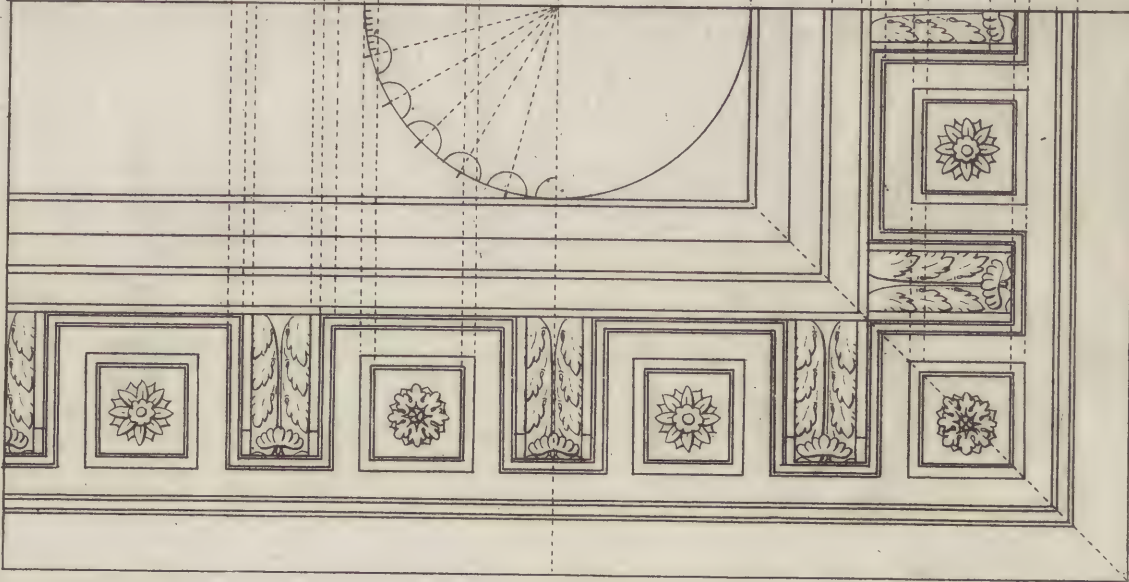


*The Corinthian Entablature and Planceer of its Cornice.*

*Plate XI.*



*The Planceer of the Cornice*



*Batty Langley Invent. 1739.*

*Tho: Langley Delin. & Sculp.*

*Dentulas at large*







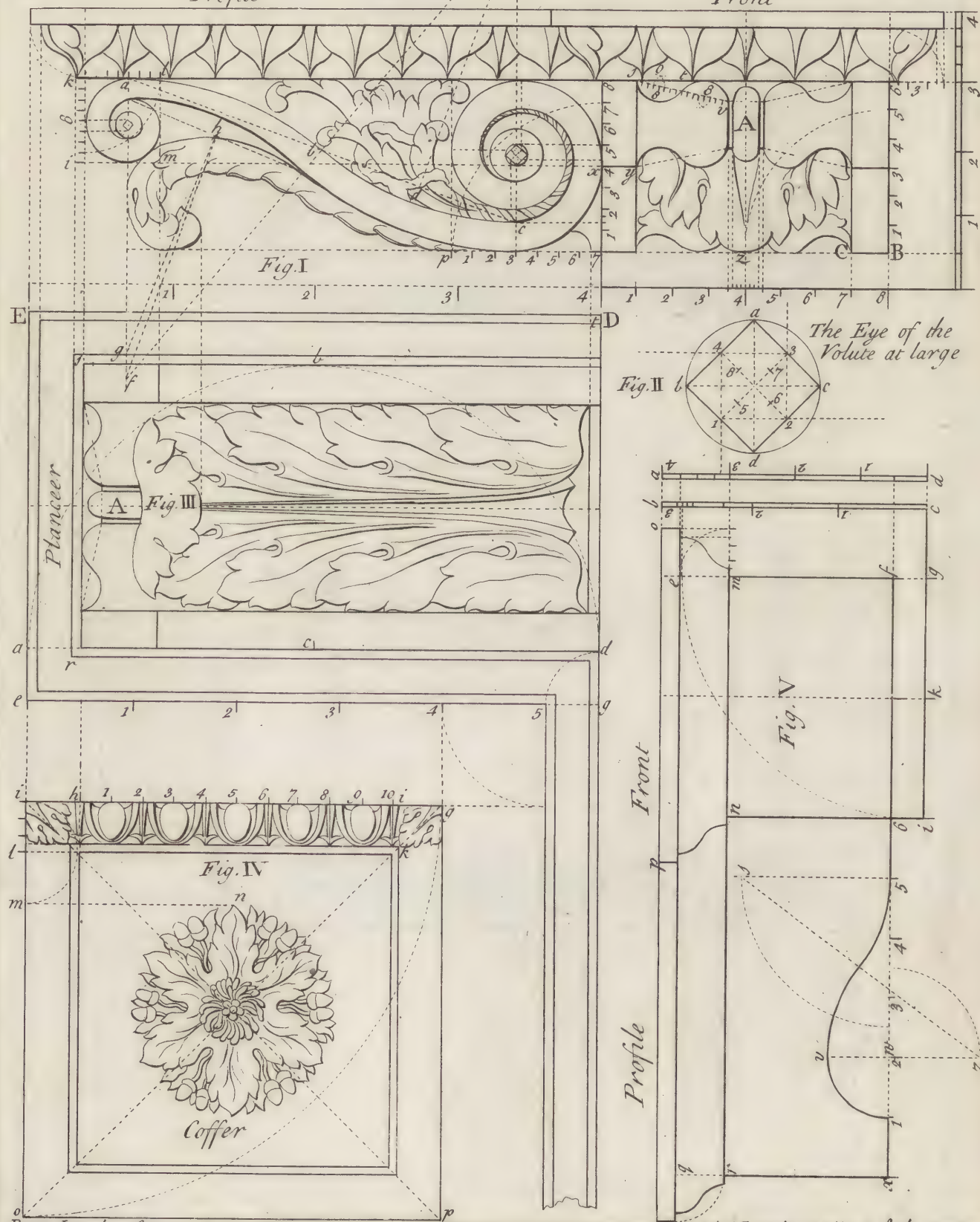
The Ionick and Corinthian Modillion

at large

Plate XII.

Profile

Front





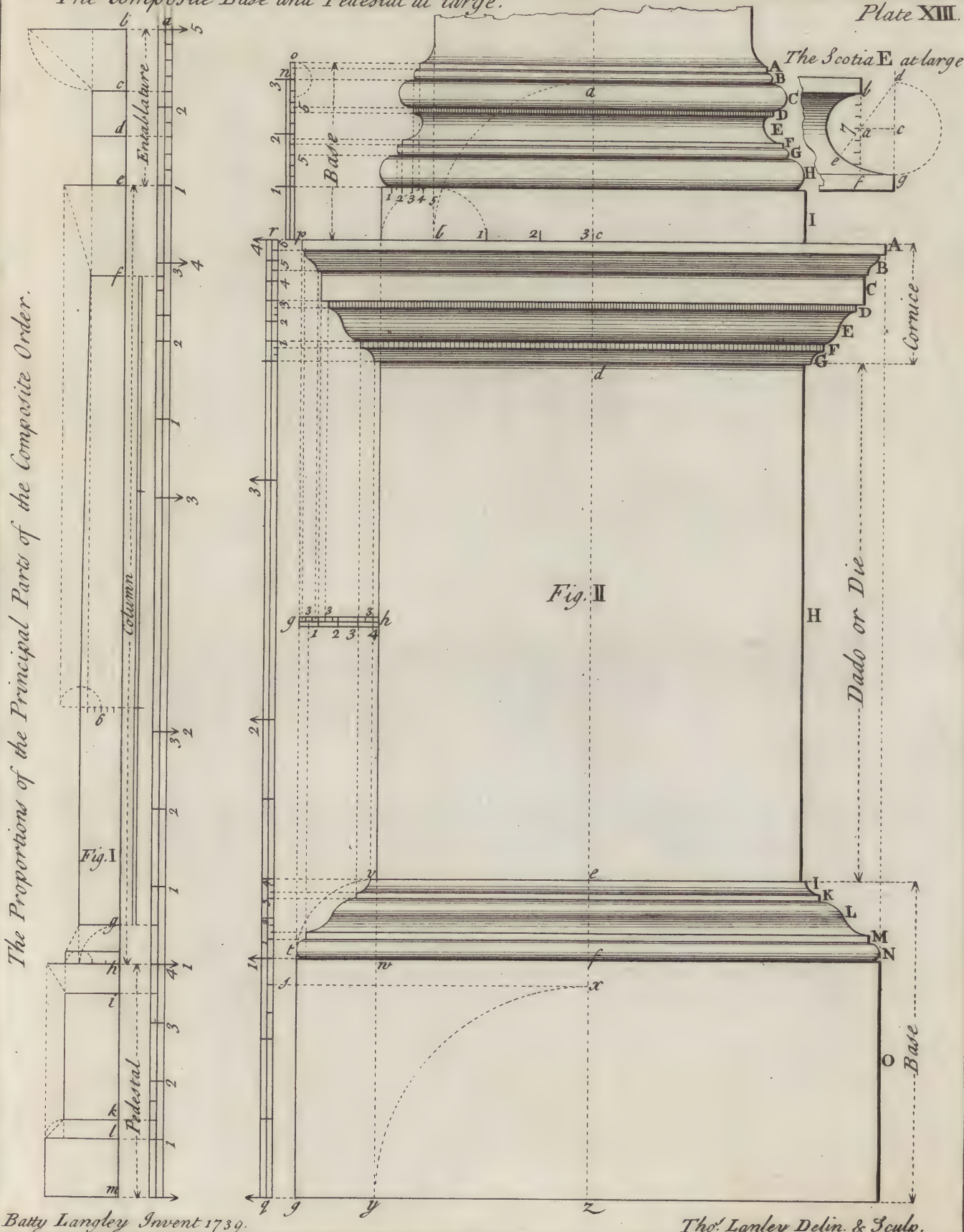




The Composite Base and Pedestal at large.

Plate XIII.

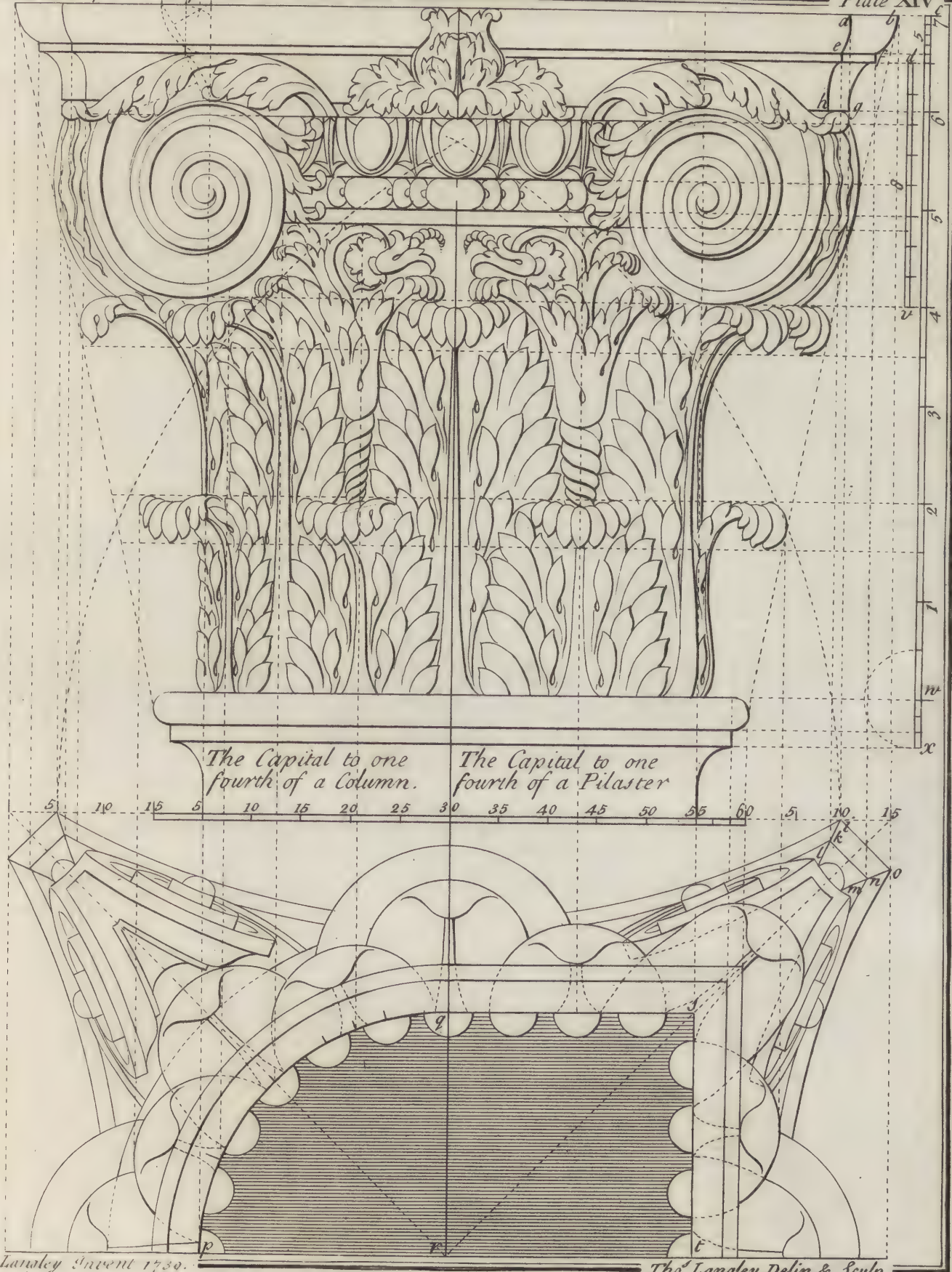
The Scotia E at large











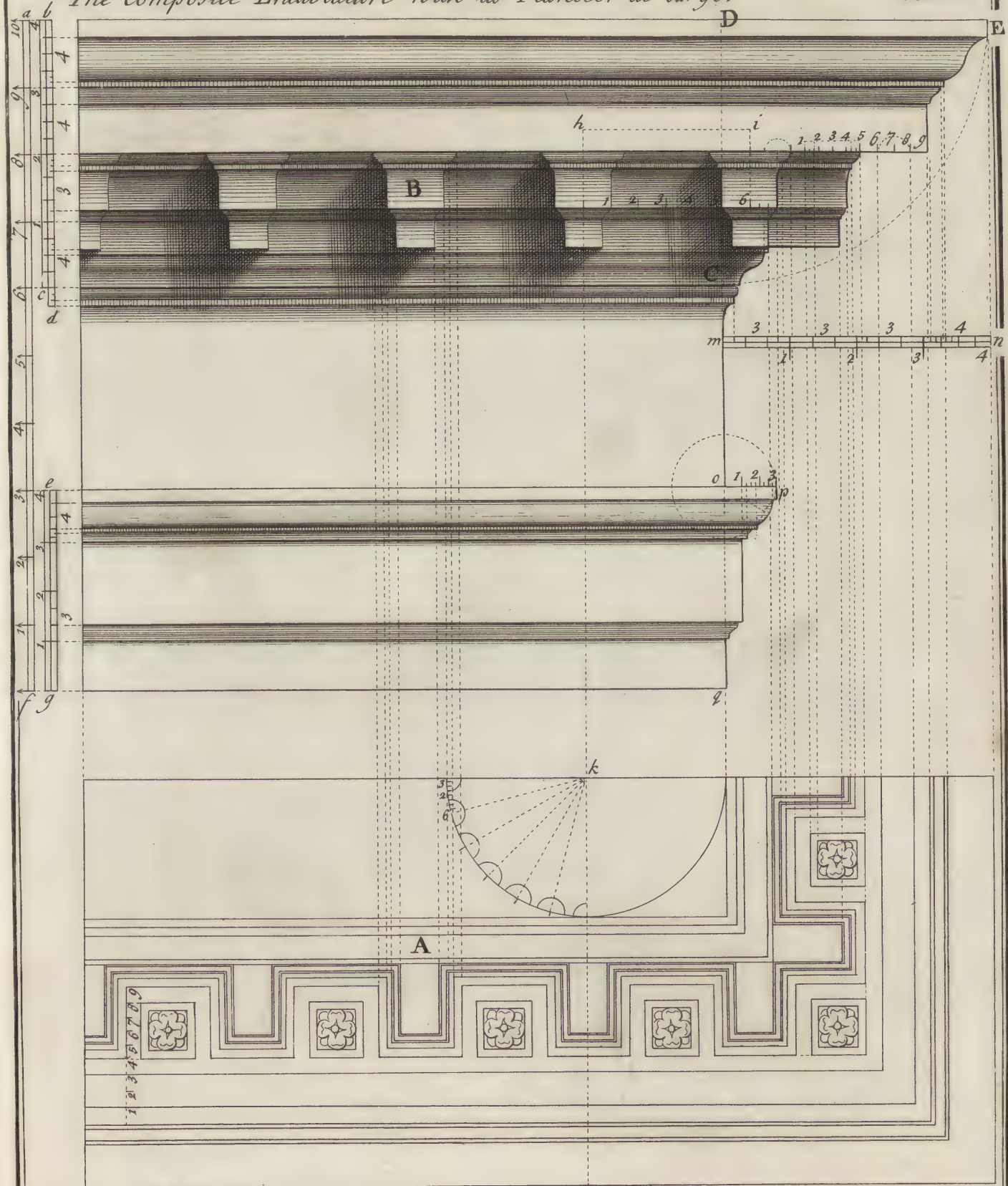






The Composite Entablature with its Planceer at large.

Plate XV.



Batty Langley Invent 1739.

Tho: Langley Delin. & Sculp.

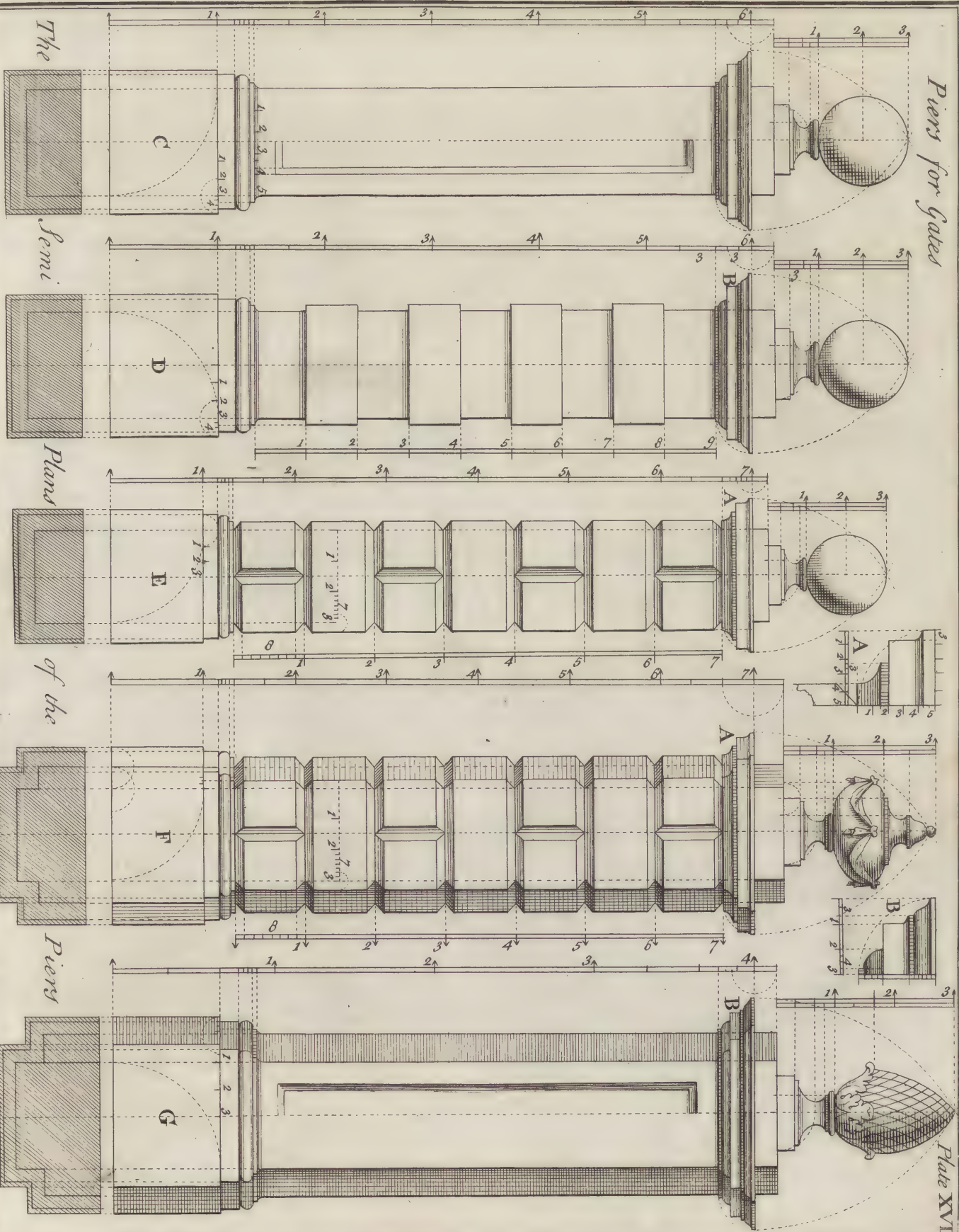






*Piers for Gates*

*Plate XVI*



*The*

*Semi*

*Plans*

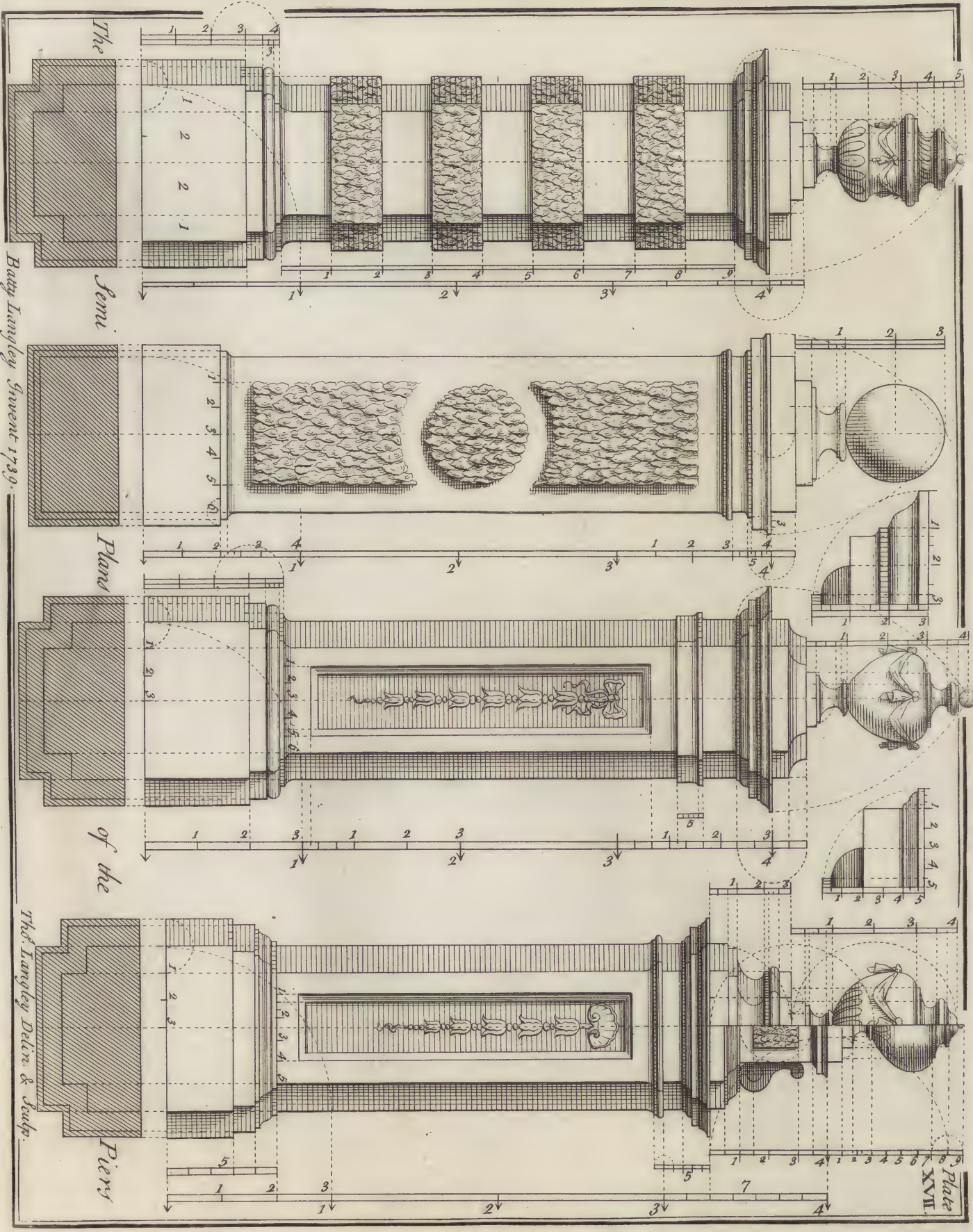
*of the*

*Piers*









Batty Langley Invent 1739.

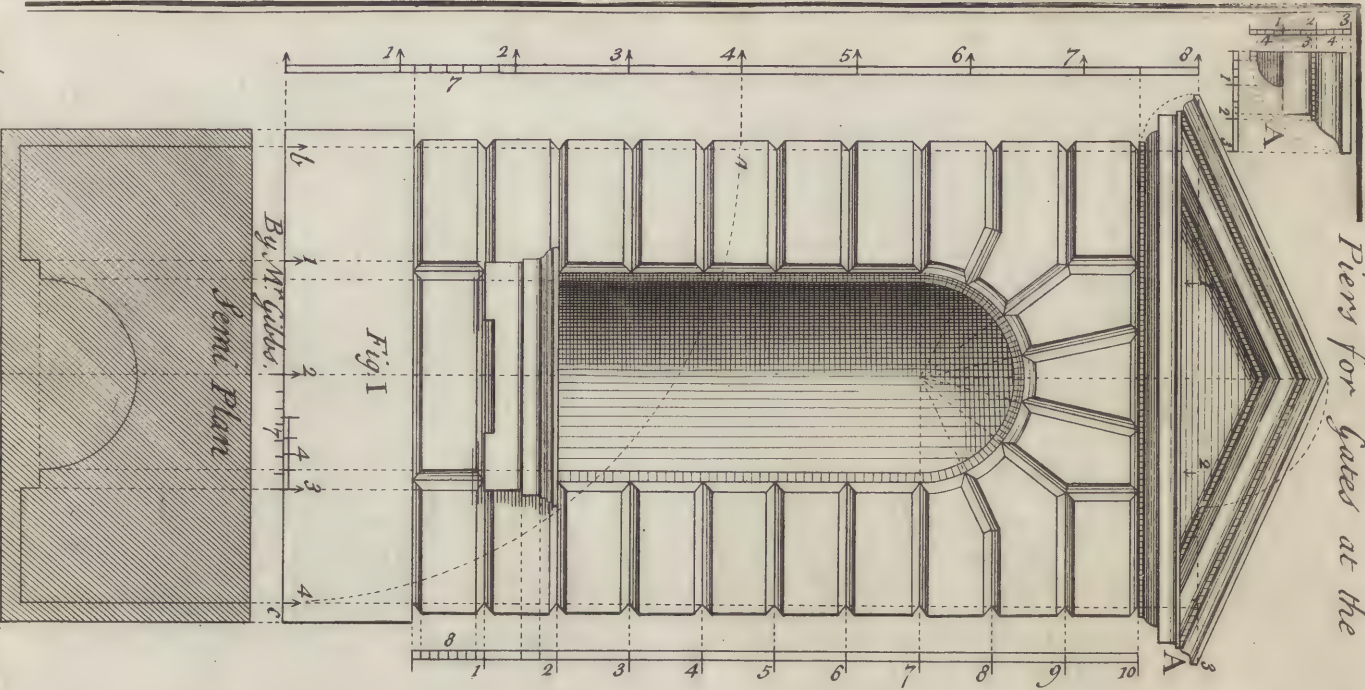
Thos. Langley Desin. & Sculp.



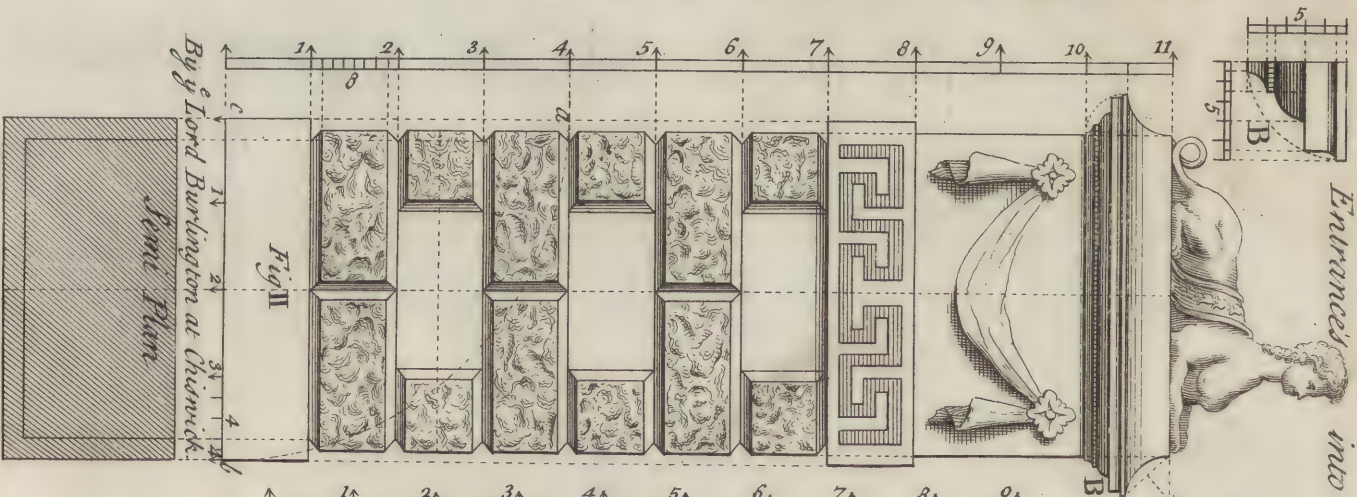




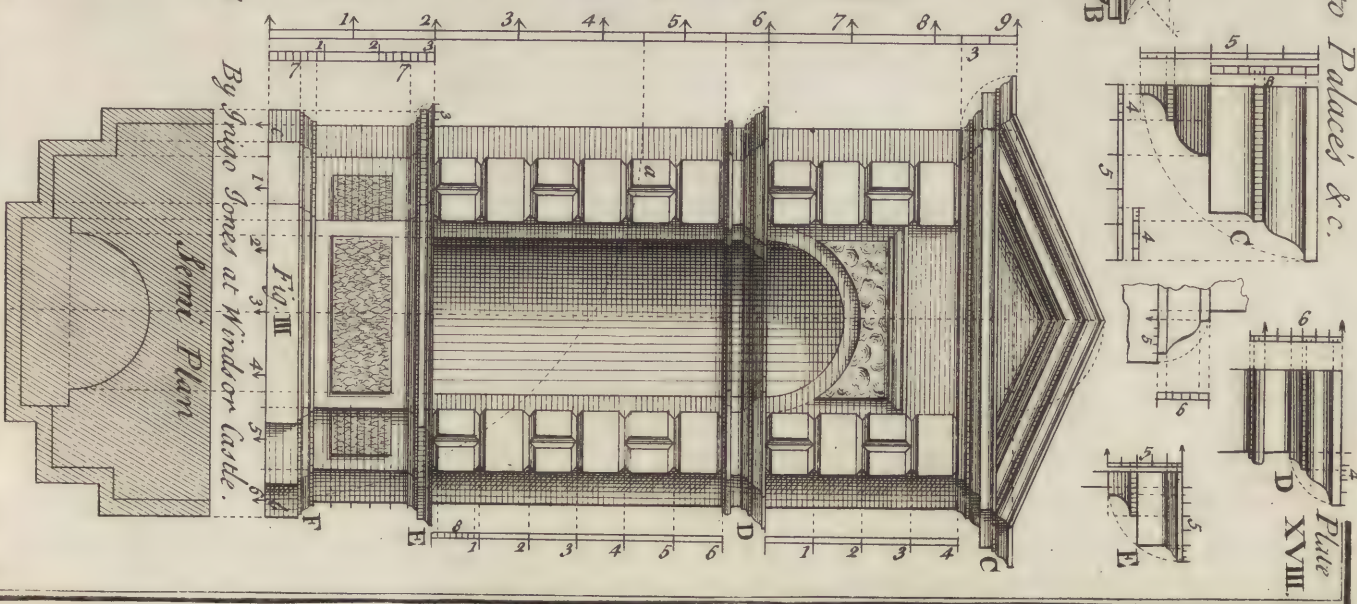
*Piers for Gates at the*



*Entrances into Palaces &c.*



*Plate XVIII.*





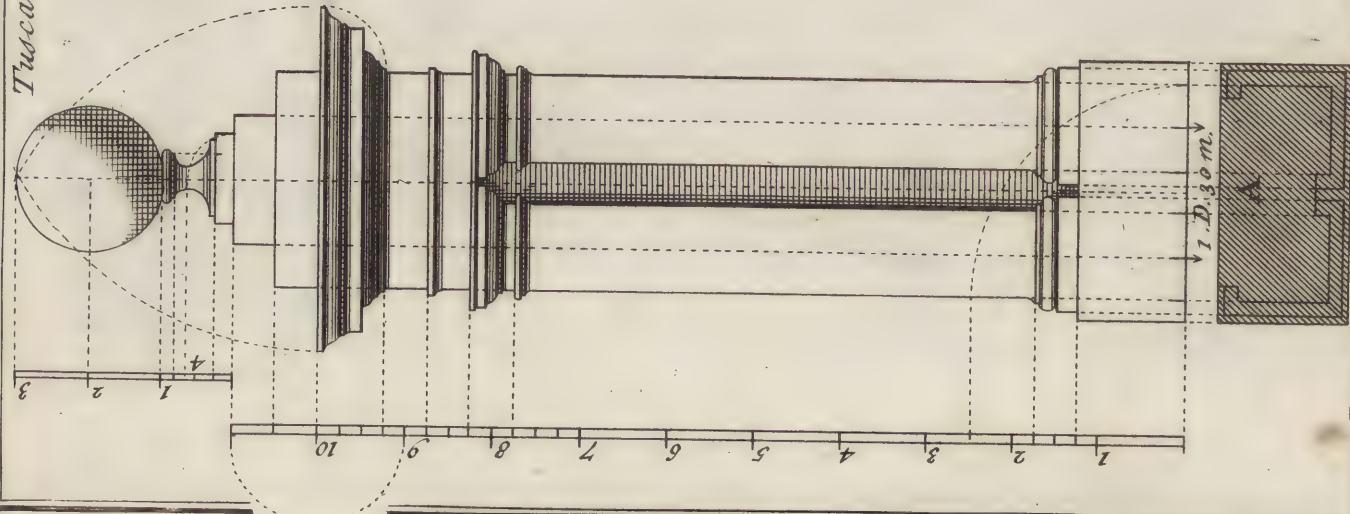




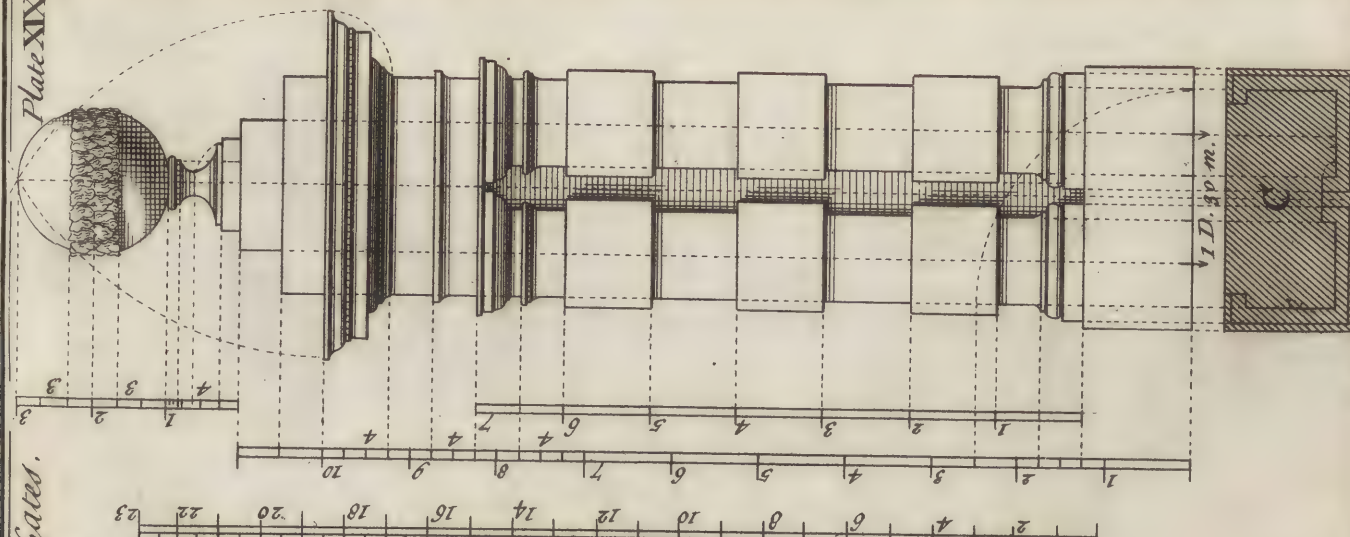
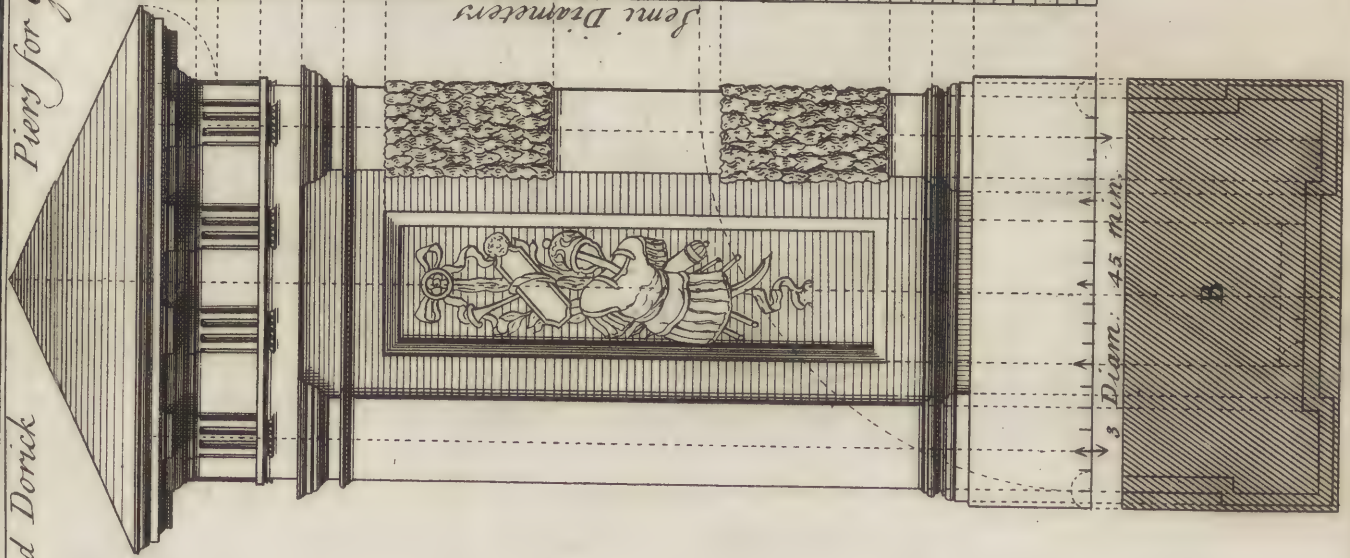
Tuscan and Doric

Piers for Gates.

Plate XIX.



Batty Langley Invent 1739.



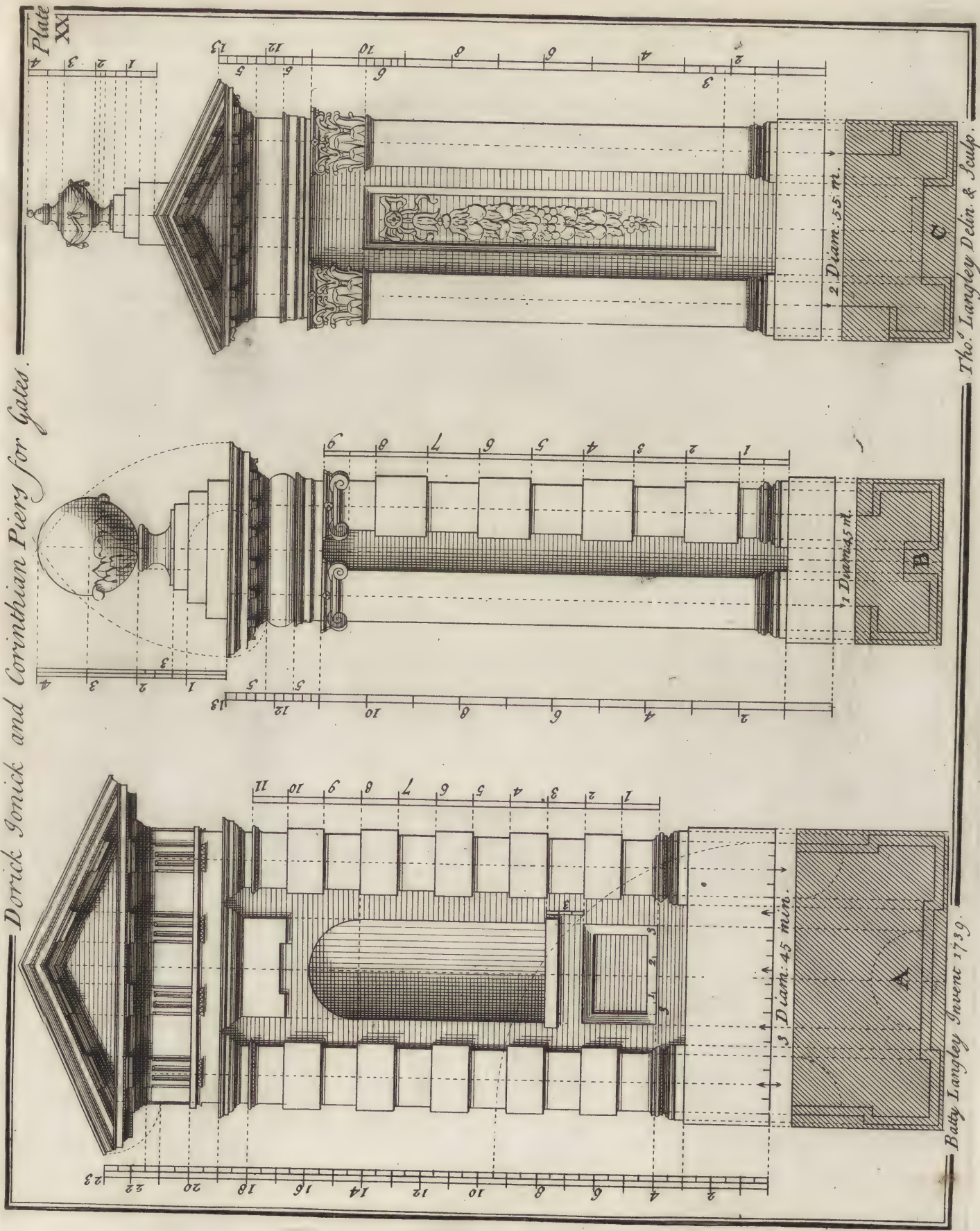
Tho. Langley Delin. & Sculp.







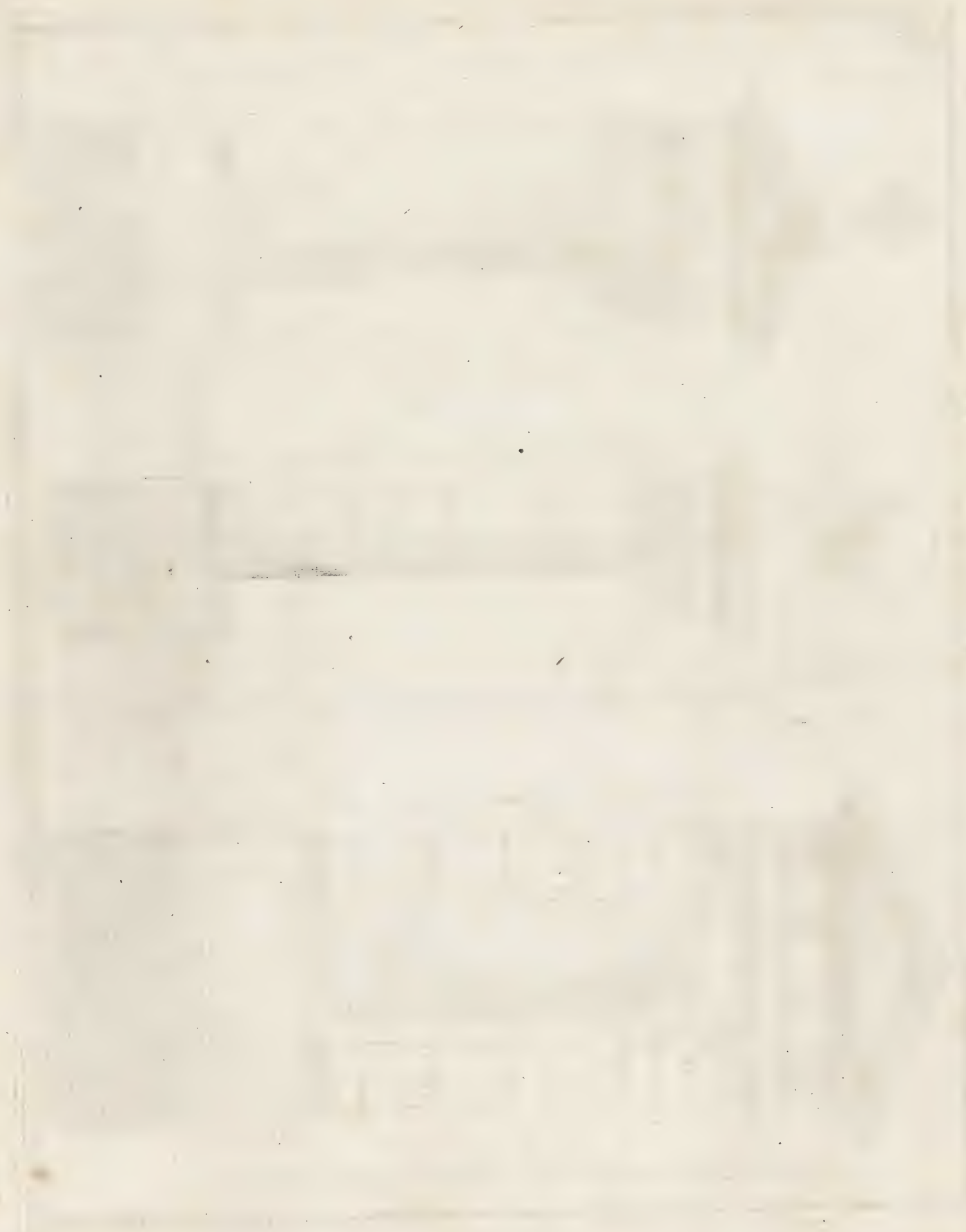
*Dorick Ionick and Corinthian Piers for Gates.*



*Batty Langley Invent 1739.*

*Tho. Langley Delin. & Sculp.*



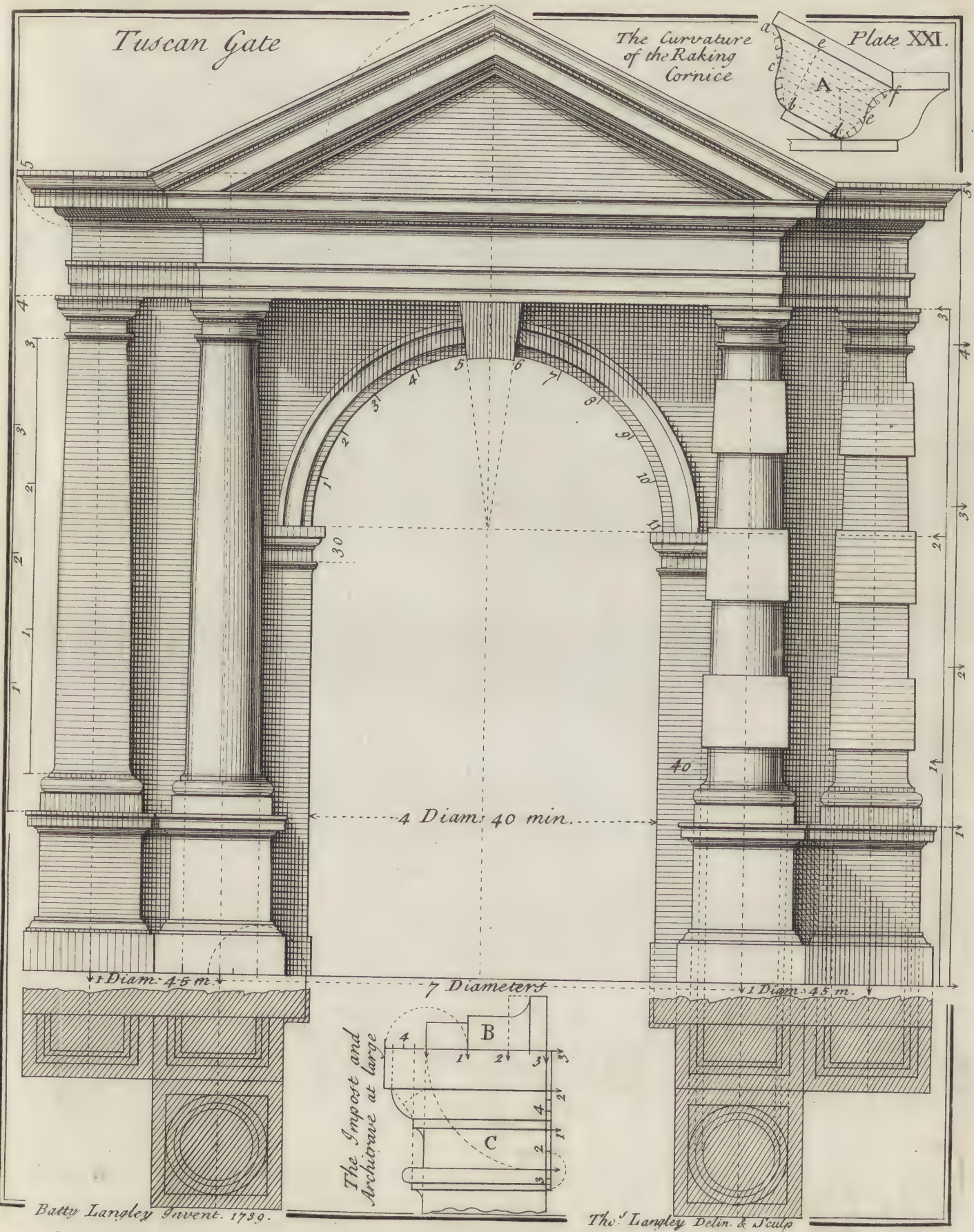
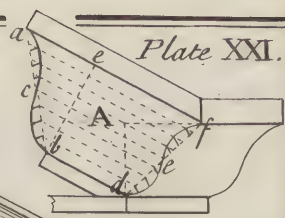




# Tuscan Gate

The Curvature  
of the Raking  
Cornice

Plate XXI.



The Impost and  
Architrave at large

Batty Langley Invent. 1739.

The J. Langley Delin. & Sculp

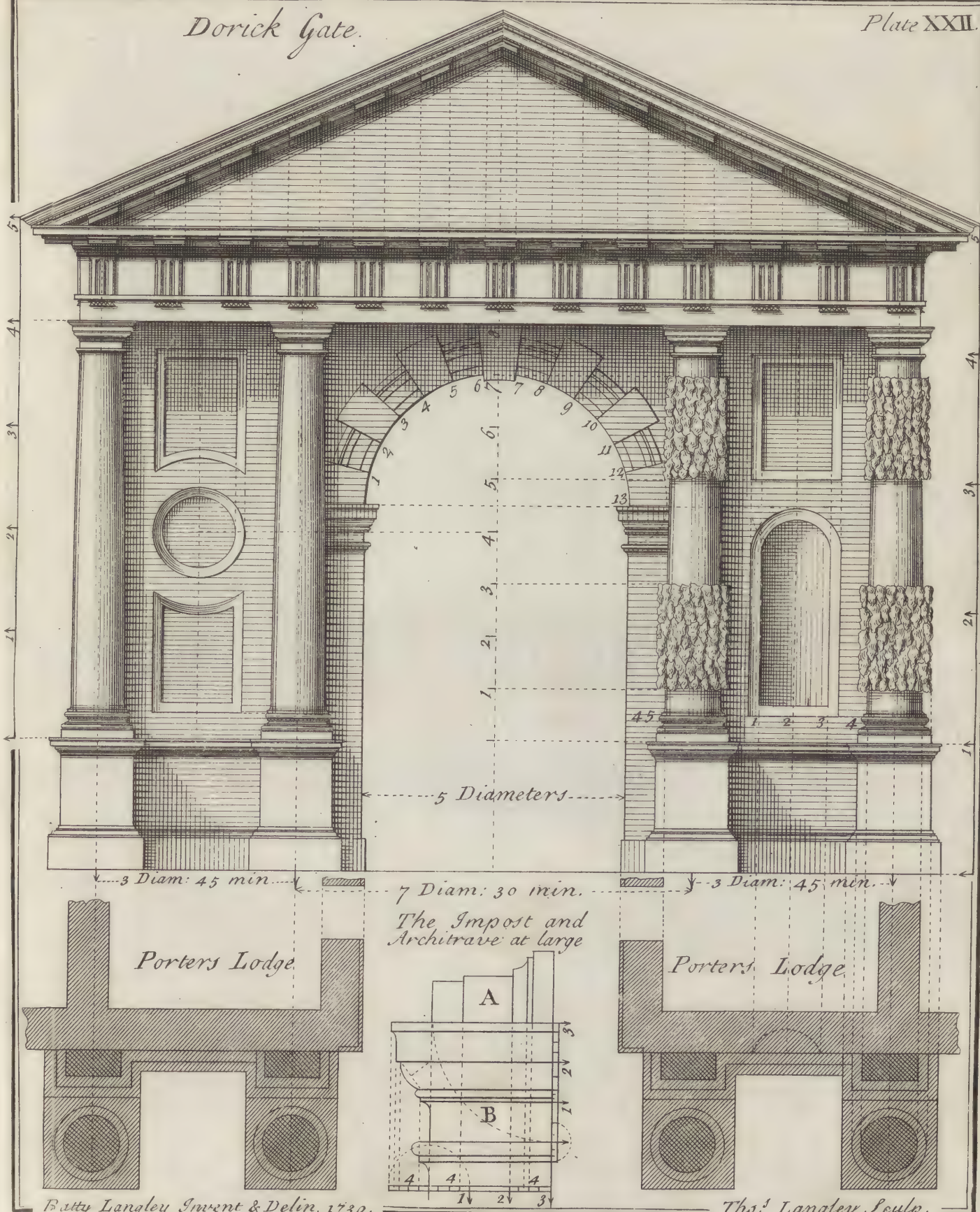






*Dorick Gate.*

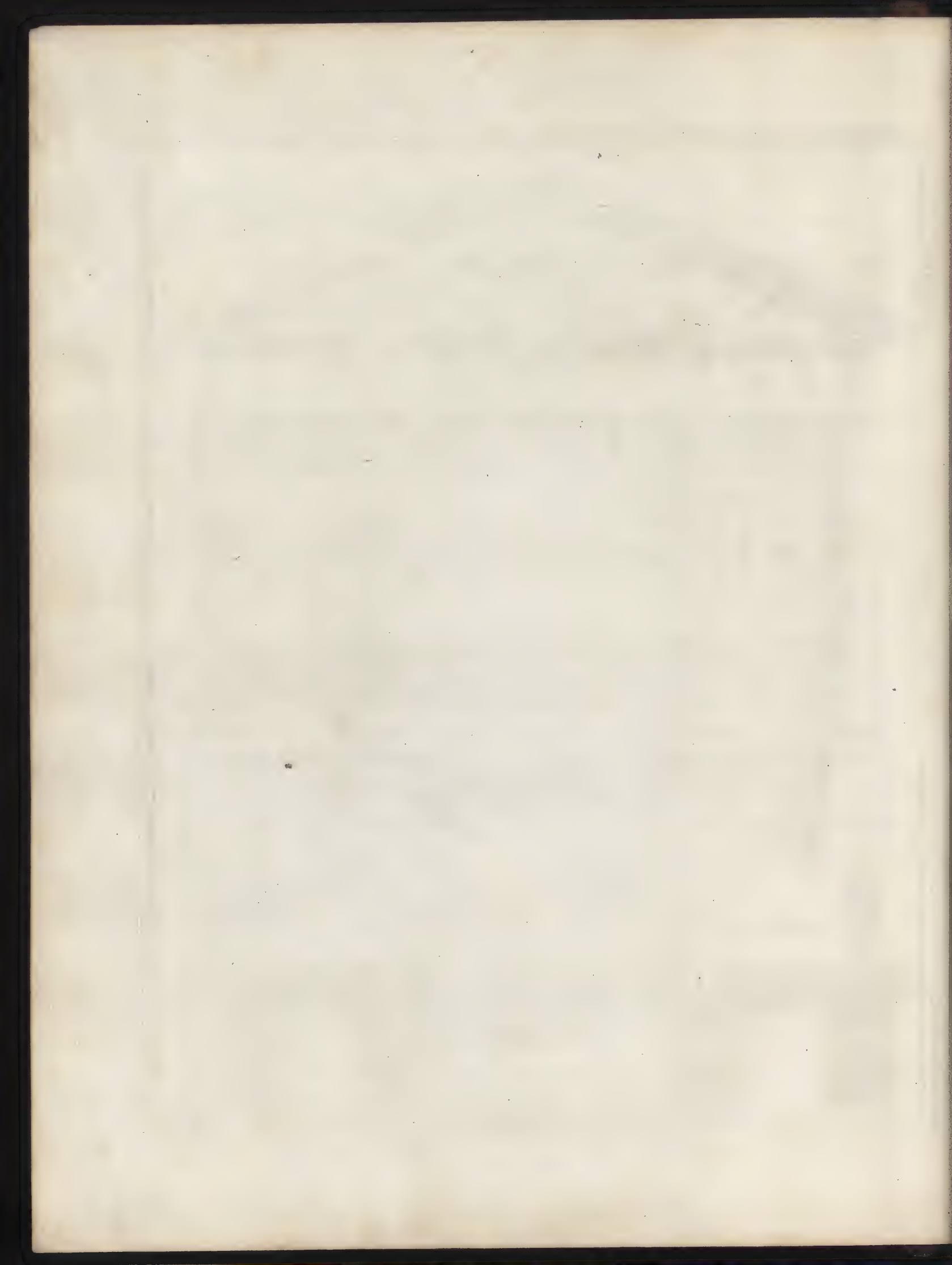
Plate XXII.



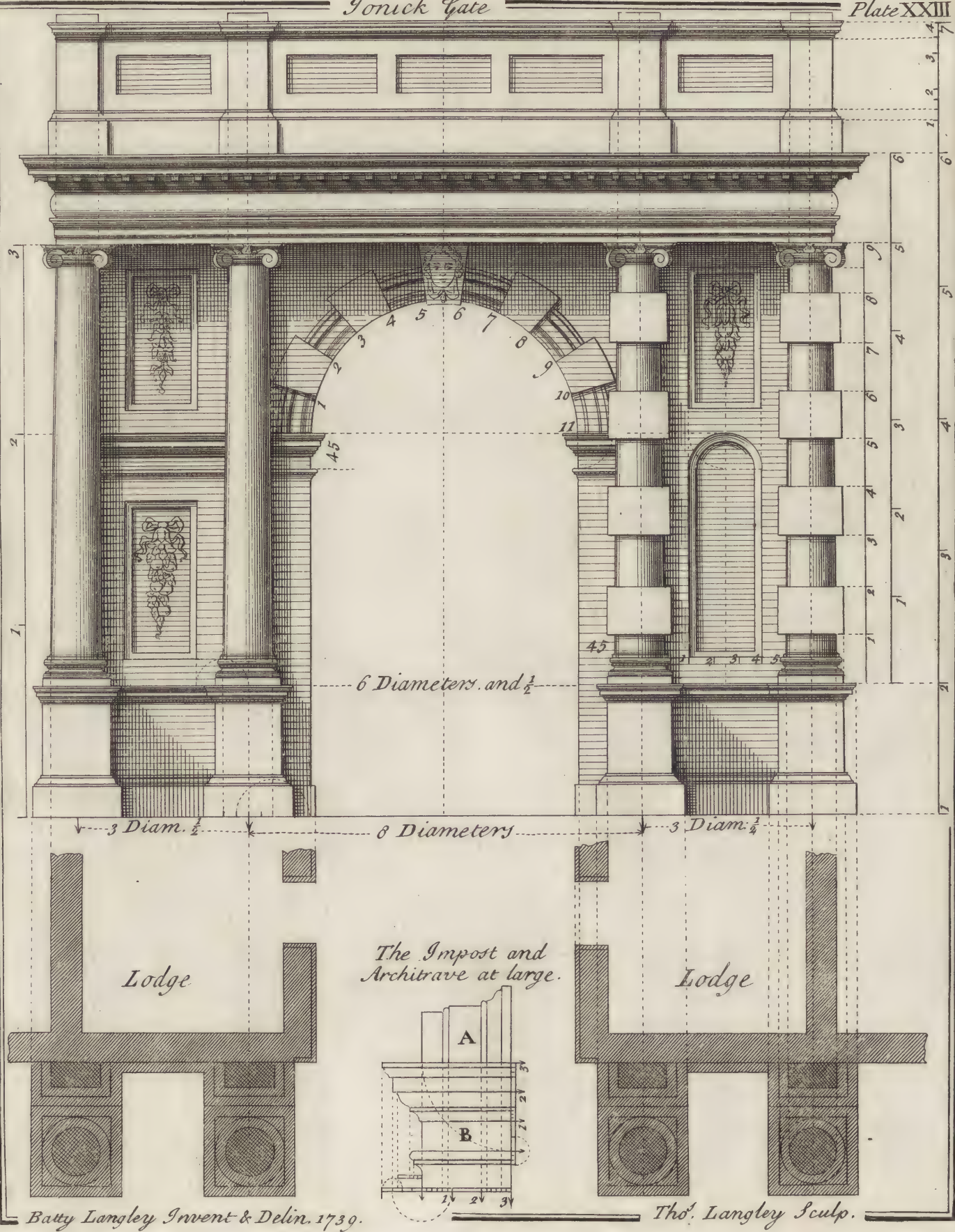
Batty Langley Invent & Delin. 1739.

Thos.<sup>d</sup> Langley Sculp.

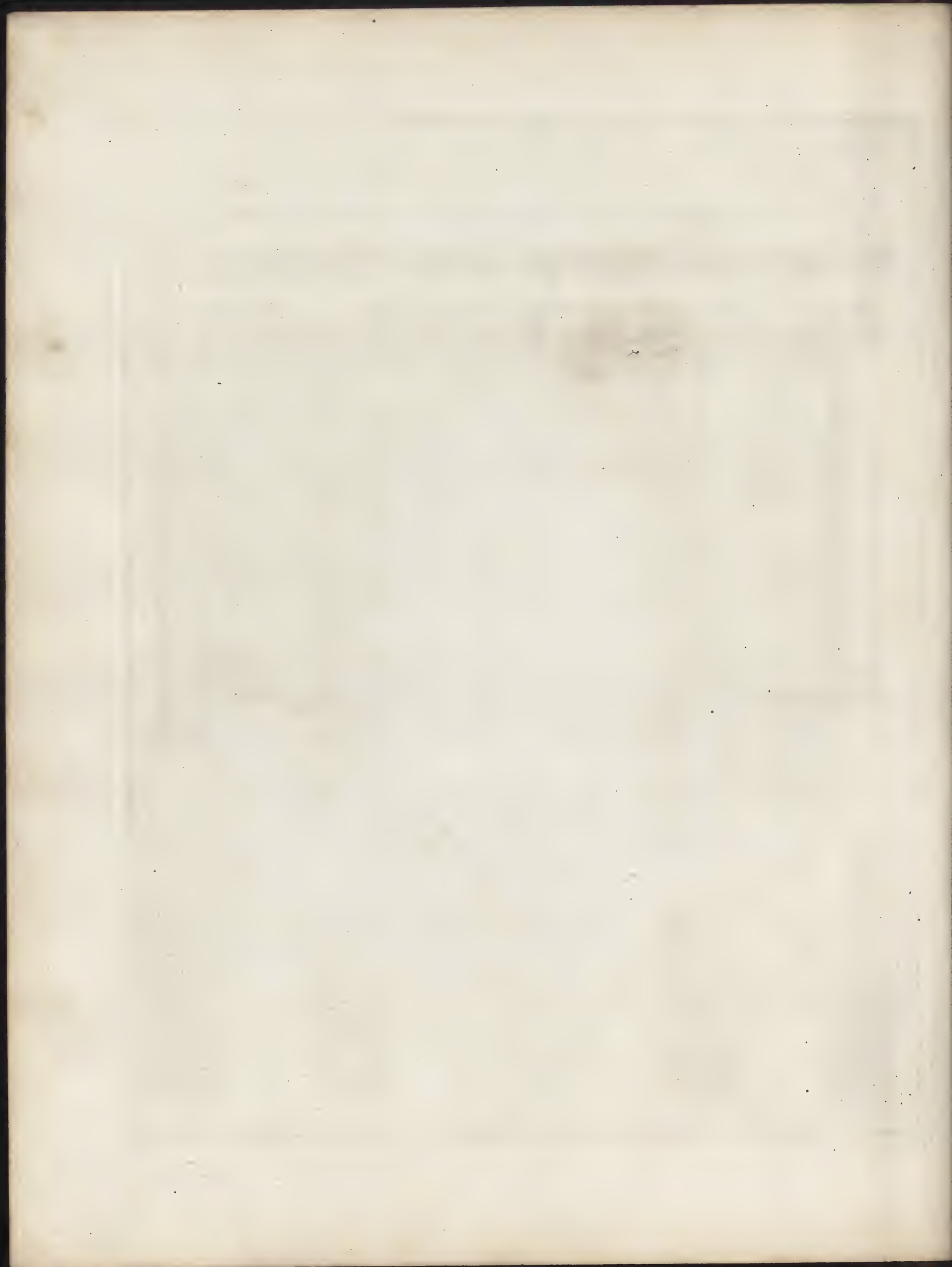








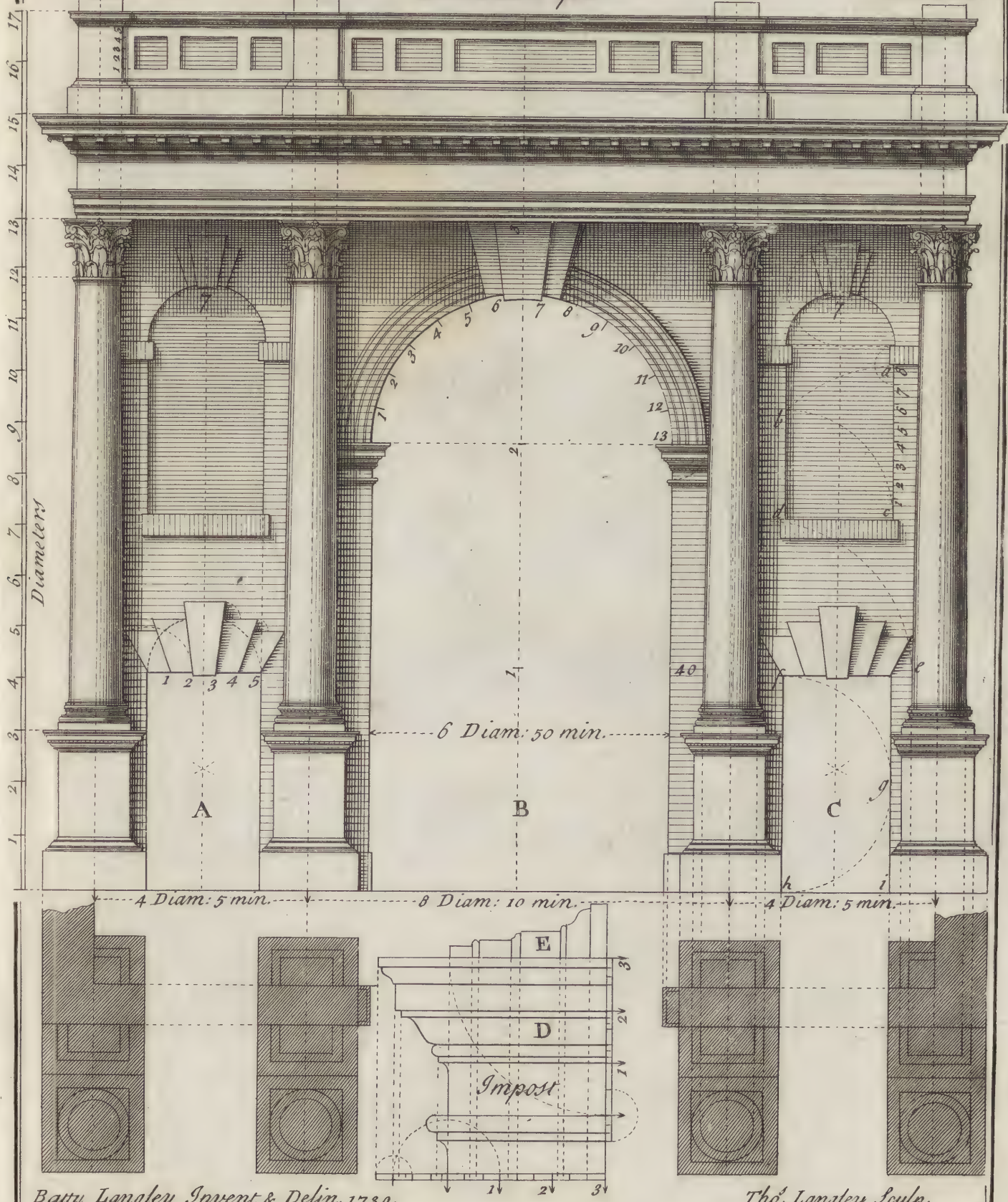






Corinthian Gate.

Plate XXIV.



Batty Langley Invent & Delin. 1739.

Tho. Langley Sculp.

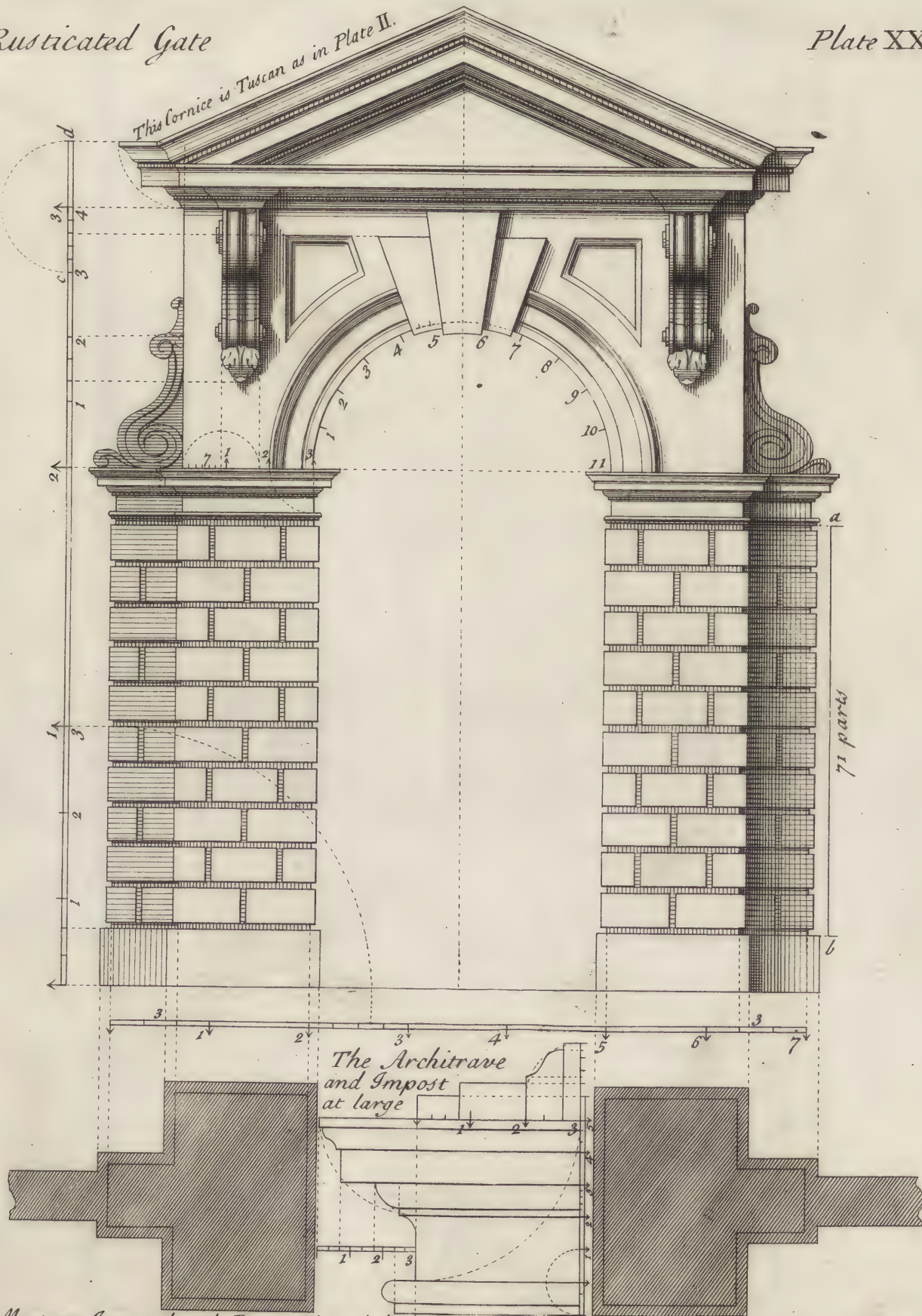






*Rusticated Gate*

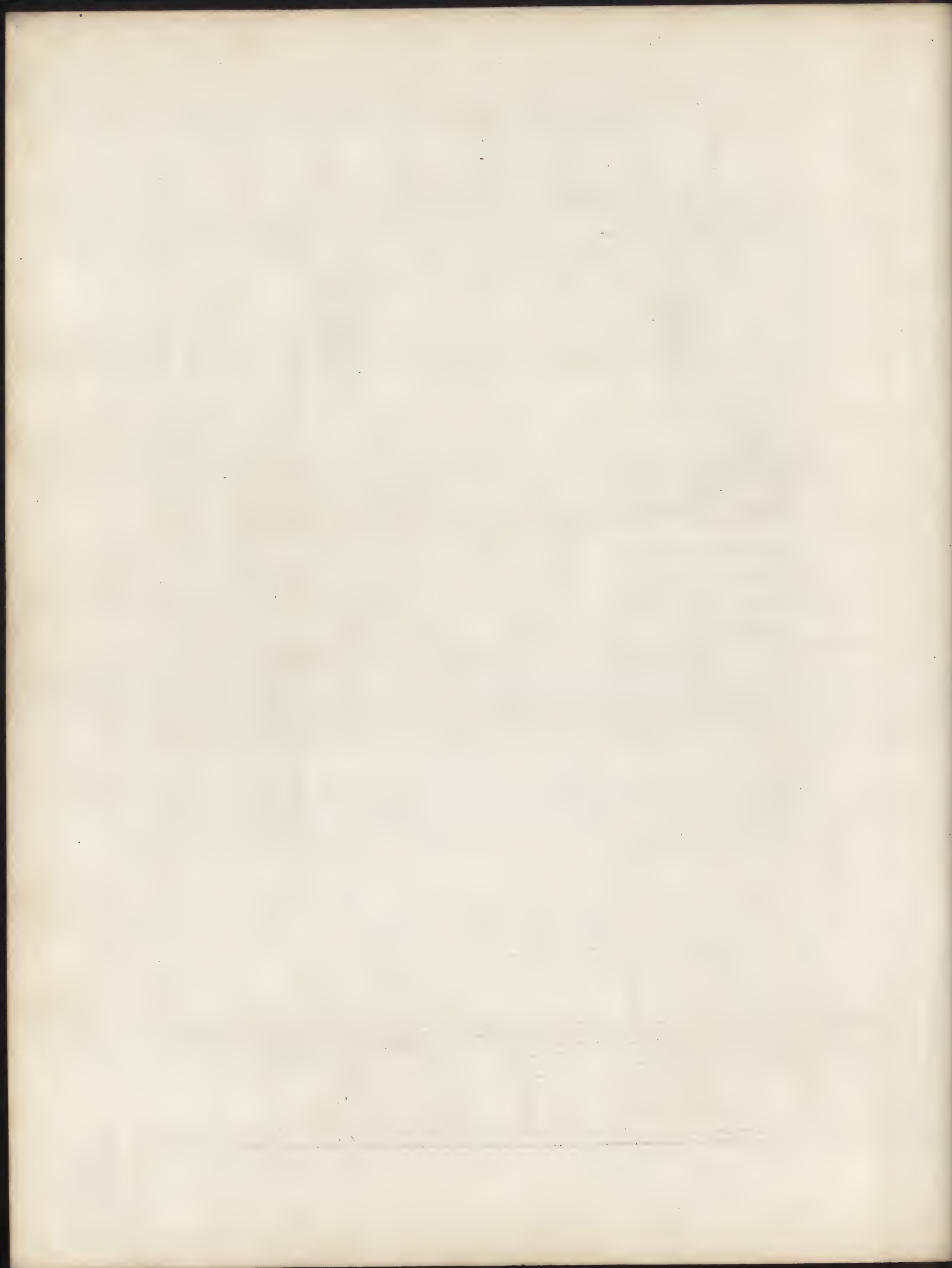
*Plate XXV.*



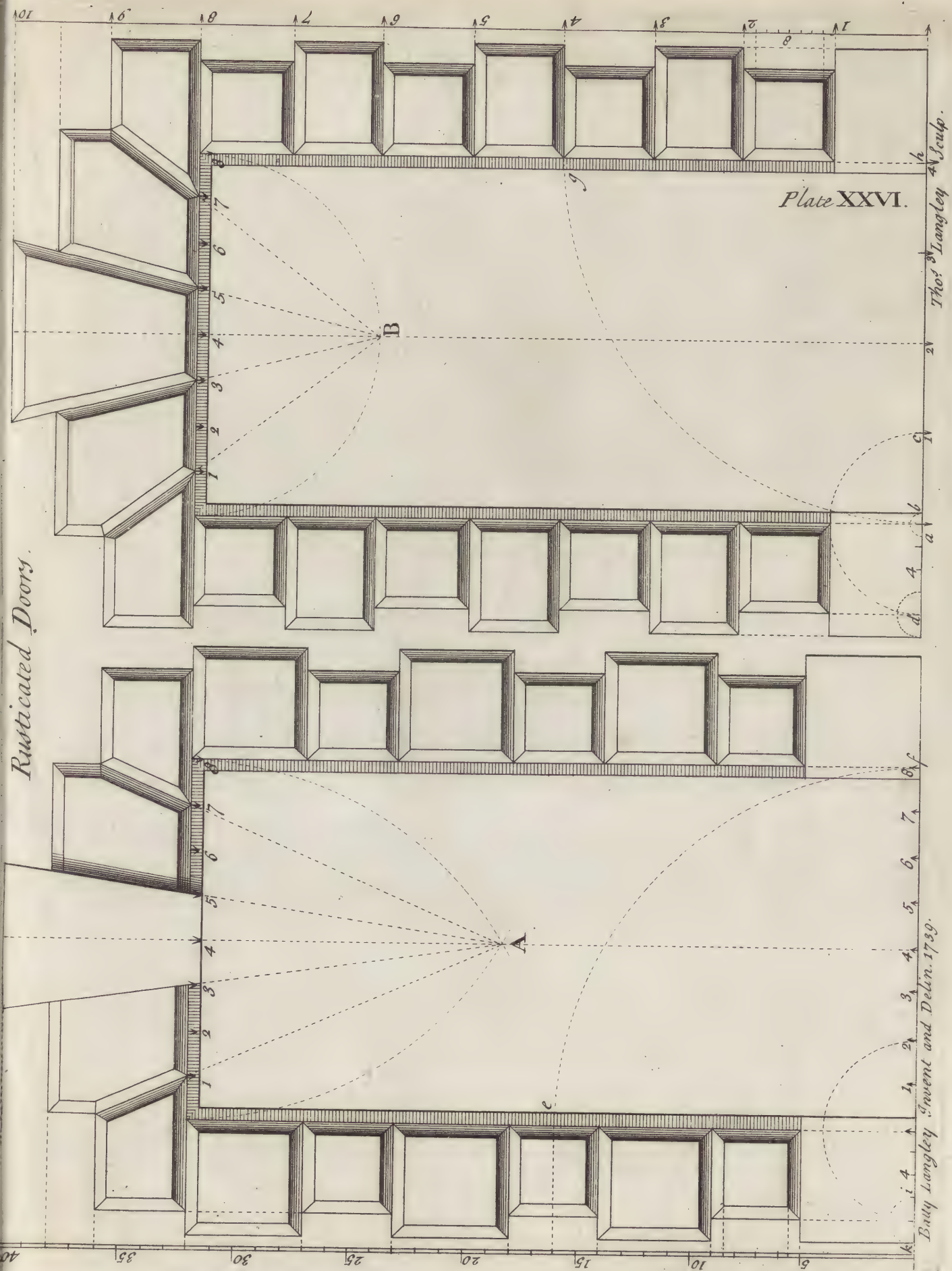
\* The Measures Invented and Proportioned by Batty Langley 1739.

Tho<sup>s</sup> Langley Delin. & Sculp.















# Rusticated Door.

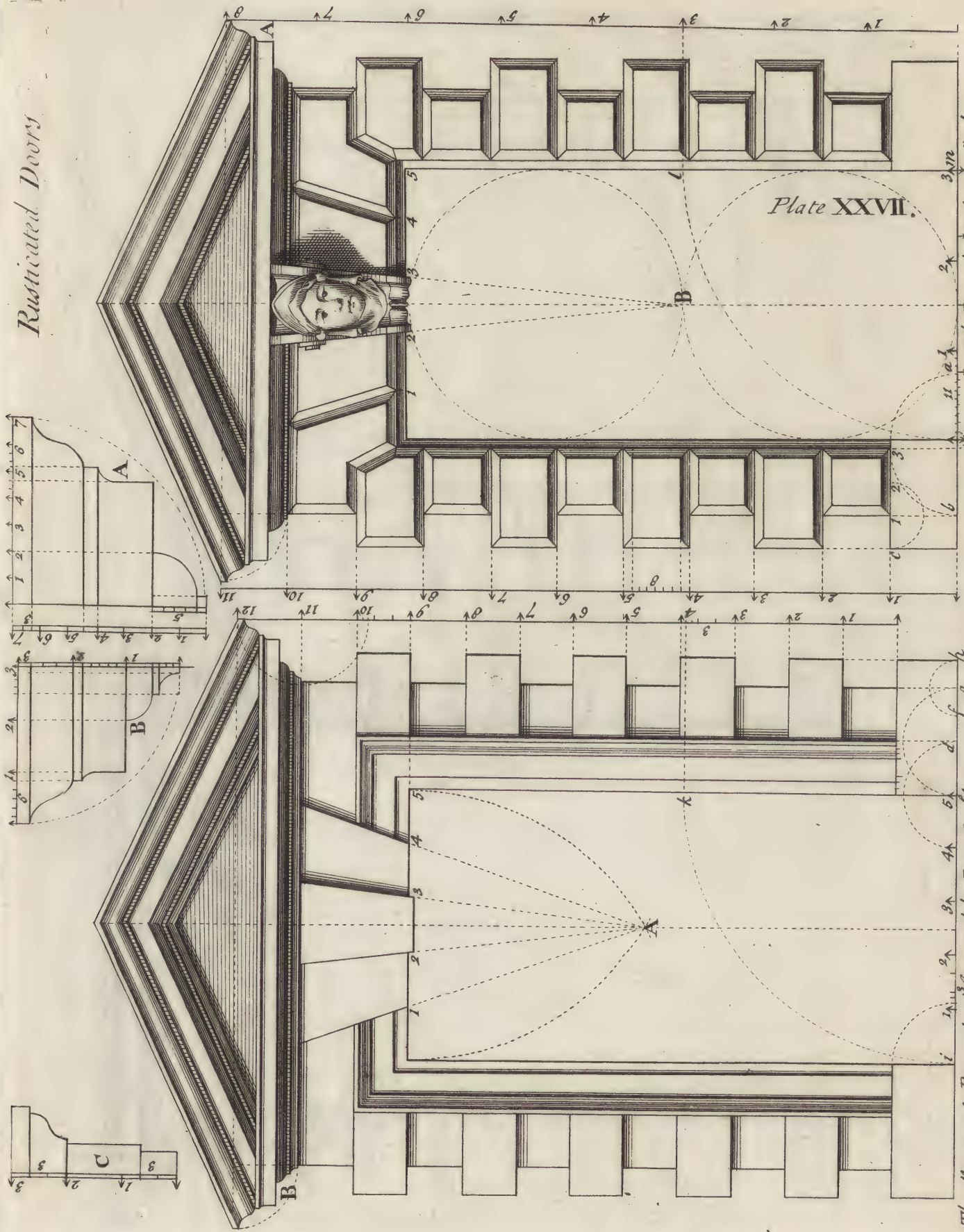


Plate XXVII.

Tho: Langley Delin & Sculp.

The Measures & Proportions Invented by Battie Langley 1789.

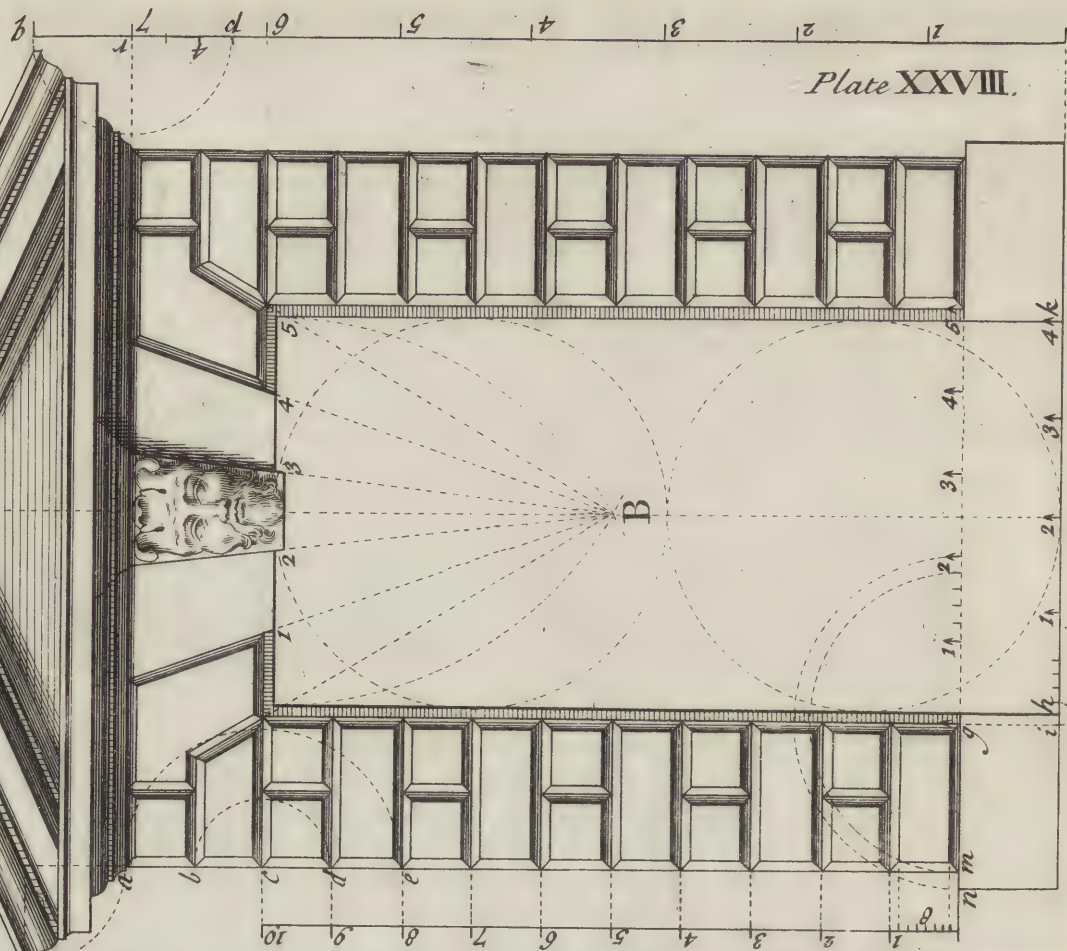








Vide Plate II for these cornices  
at large as being both  
Tuscan.



The Measures Invented Proportioned & Affixed by Battie Langley 1730.

Tho. Langley Delin. & Sculp.



संस्कृत-विश्वकोश

संस्कृत-विश्वकोश

संस्कृत-विश्वकोश

संस्कृत-विश्वकोश



*Rusticated Doors.*

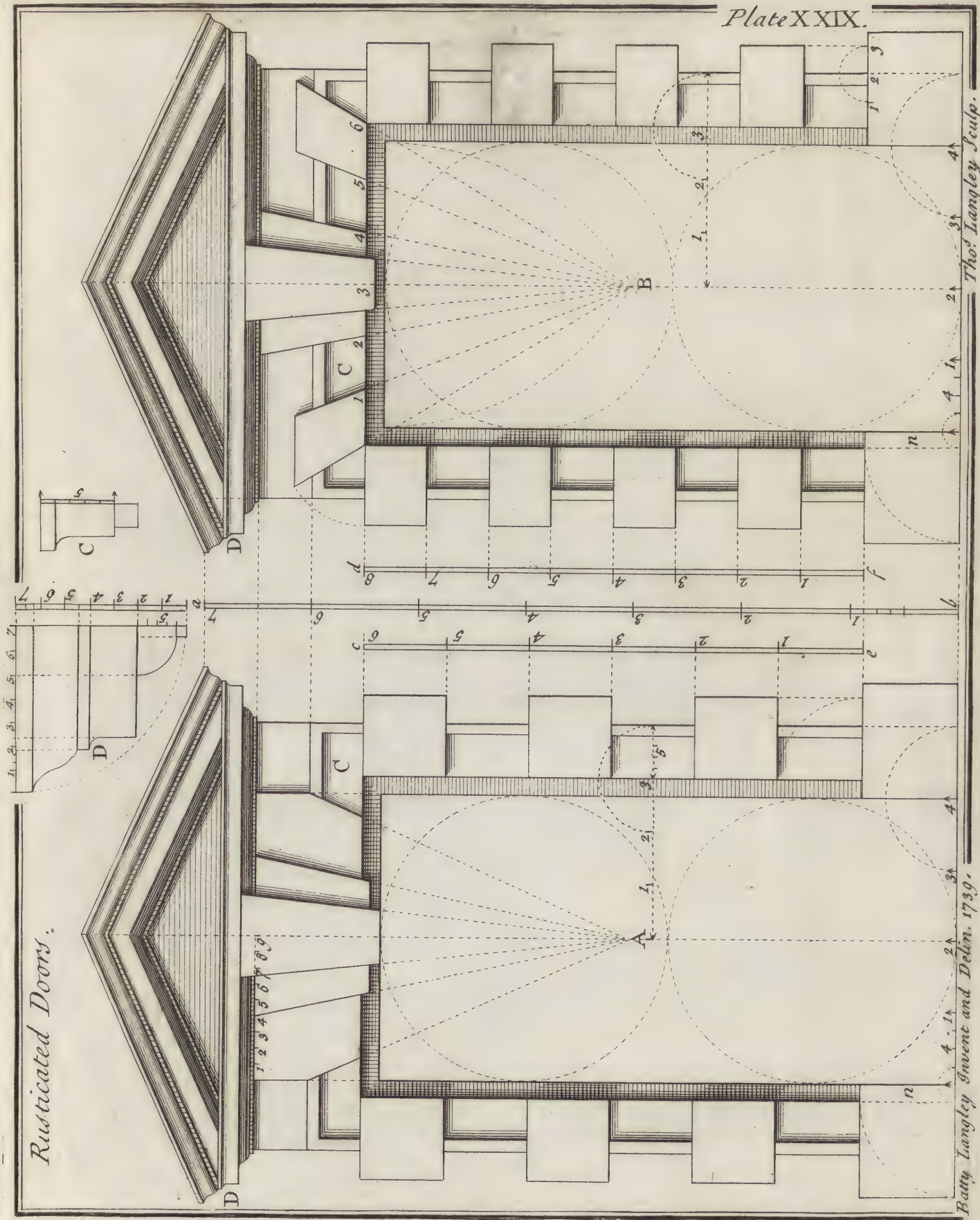


Plate XXIX.

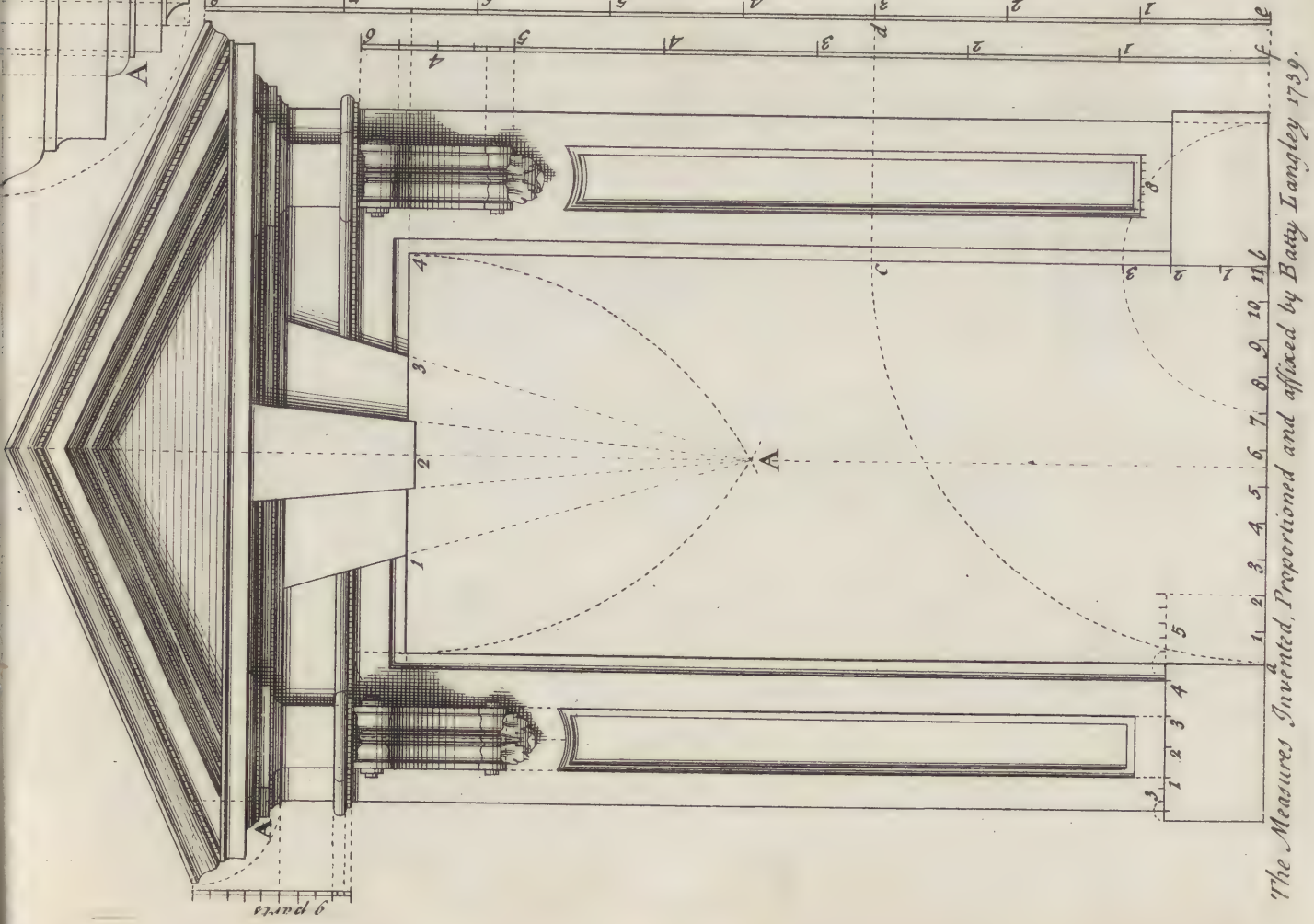
Tho: Langley Sculp.

Batty Langley Invent and Delin. 1739.









The Measures Invented, Proportioned and affixed by Battie Langley 1739.

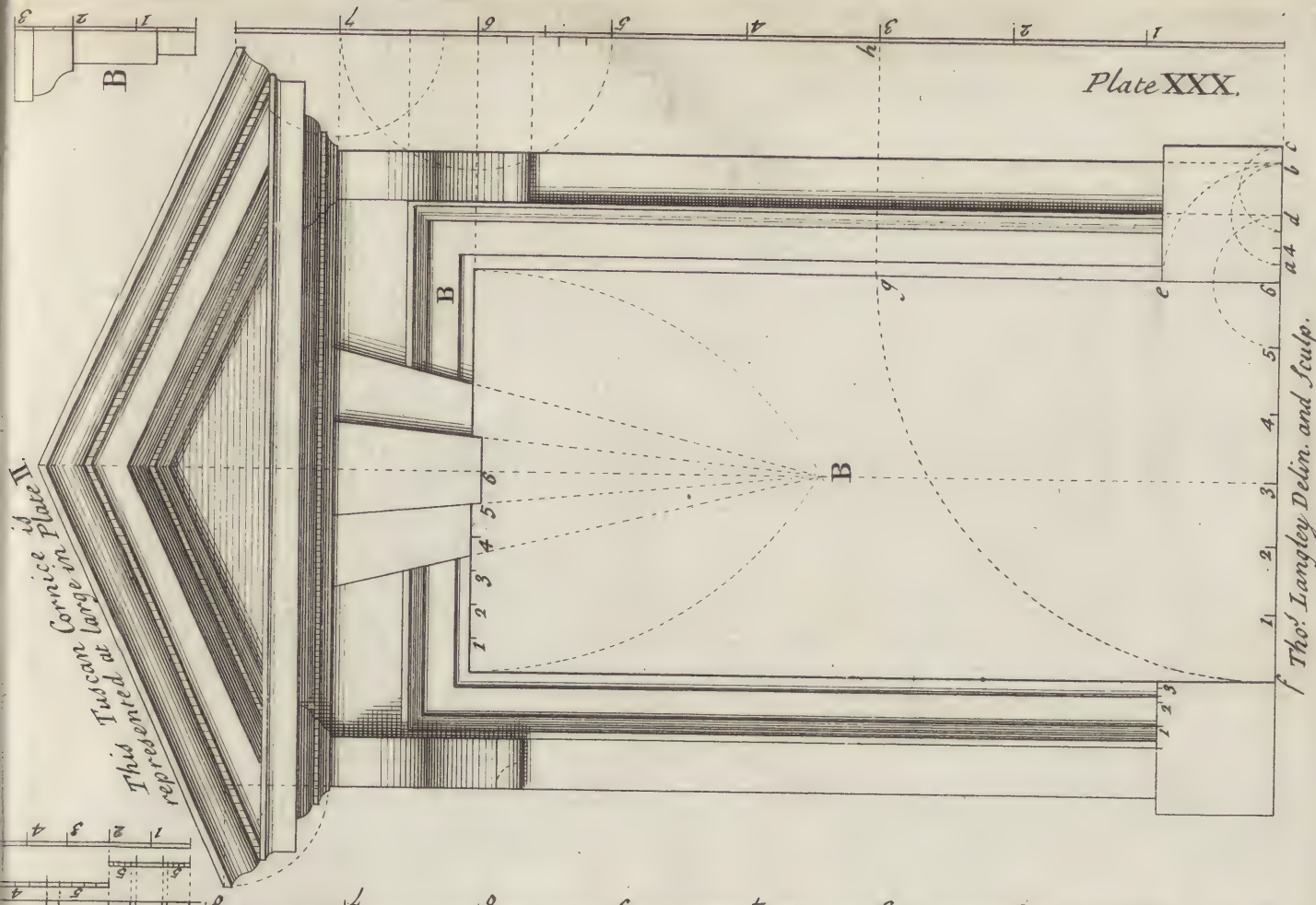
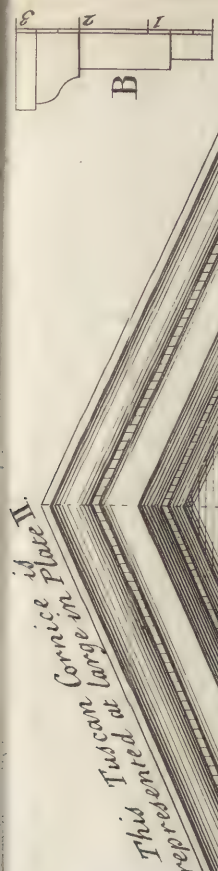


Plate XXX.

f Tho: Langley Delin. and Sculp.

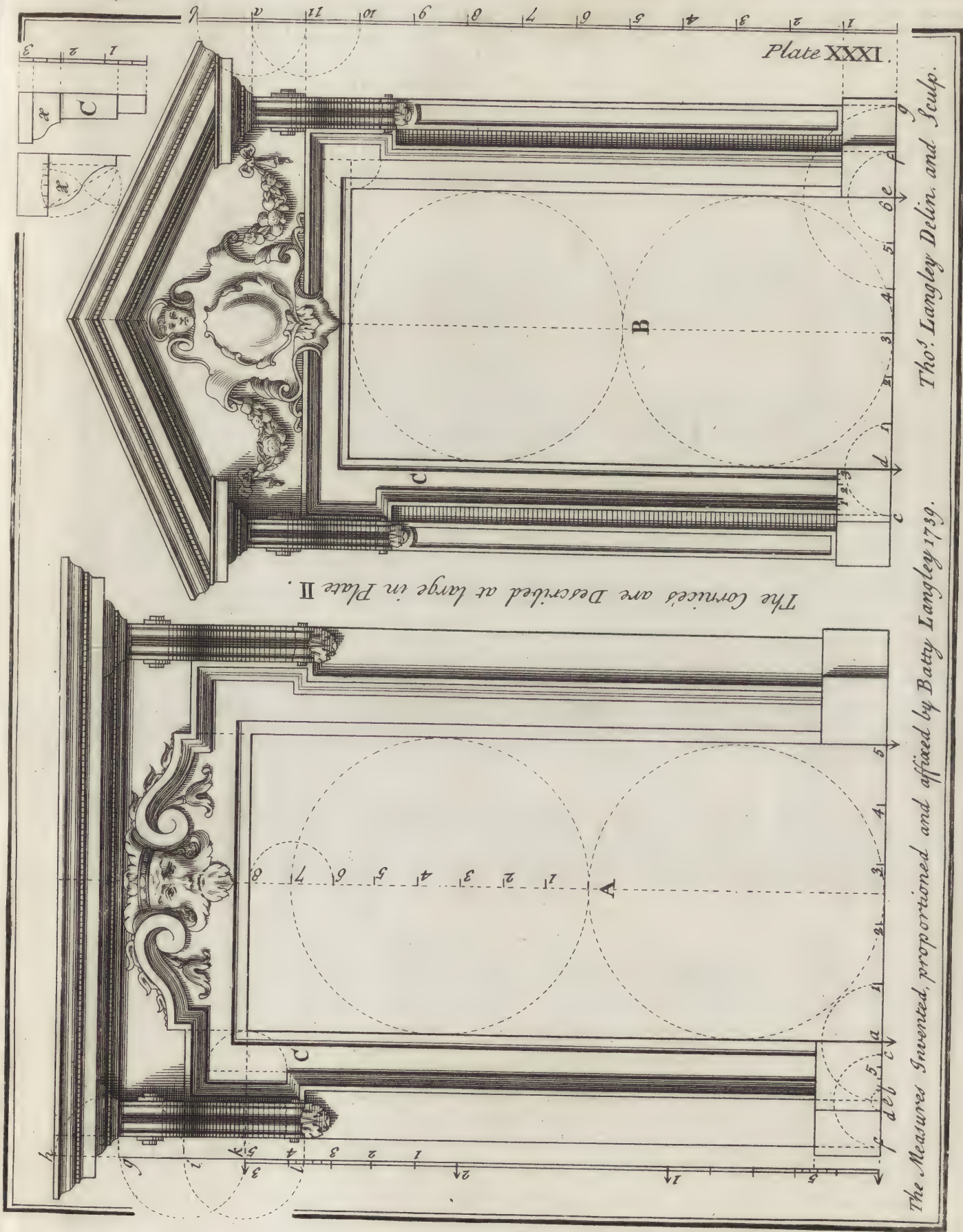


Cornice Plate II.  
This Tuscan Cornice at large in  
represented at large in

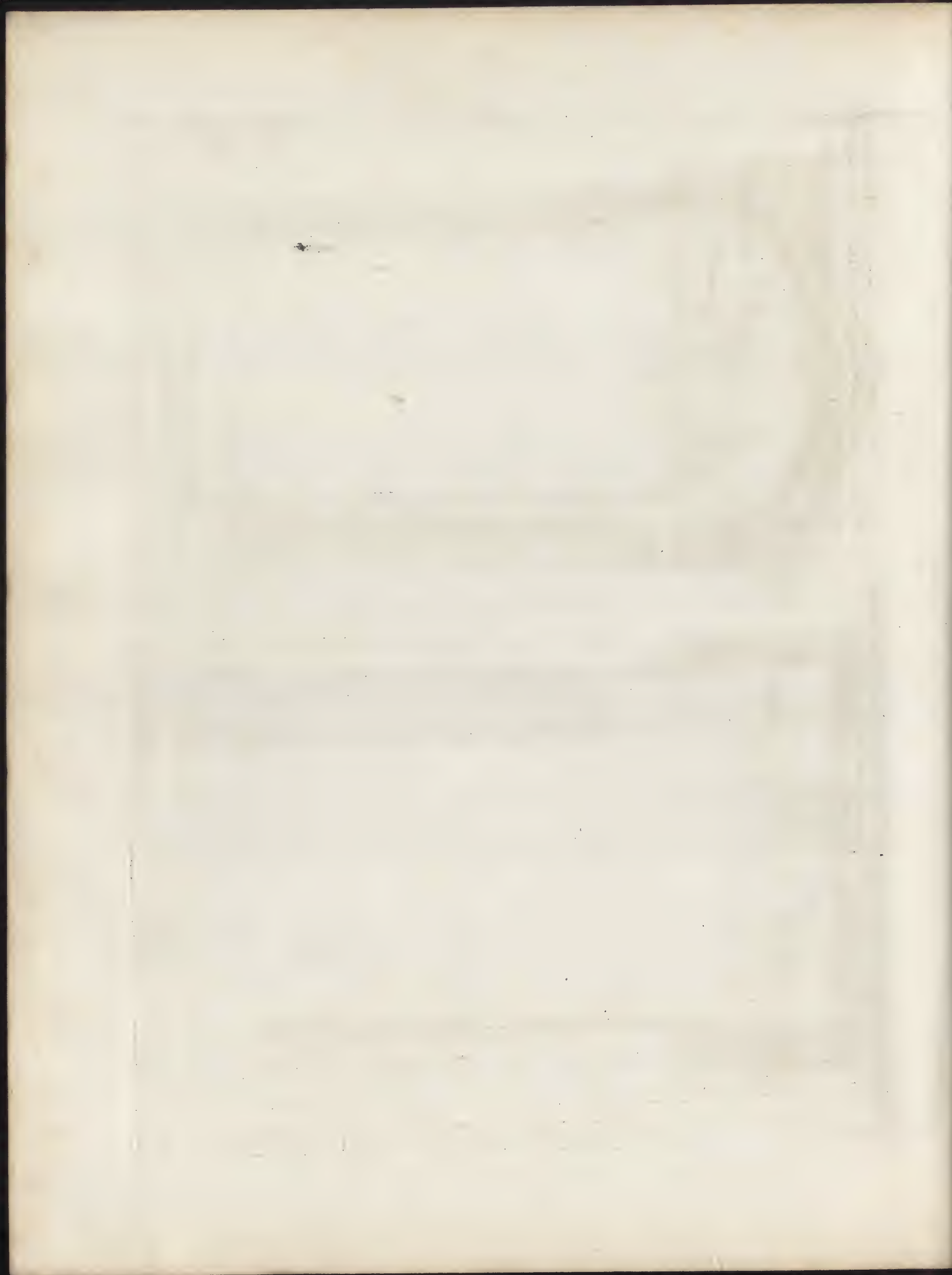




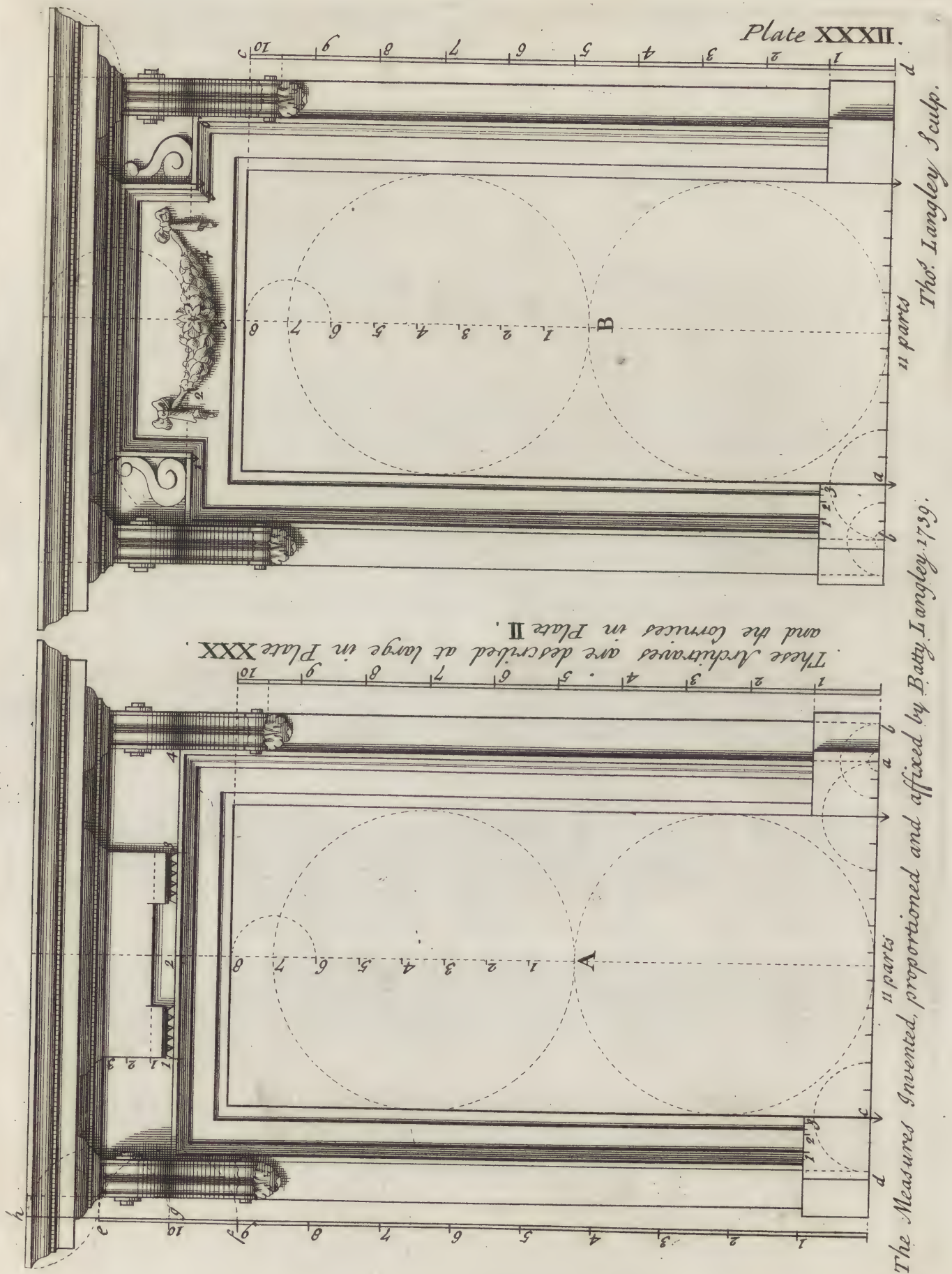










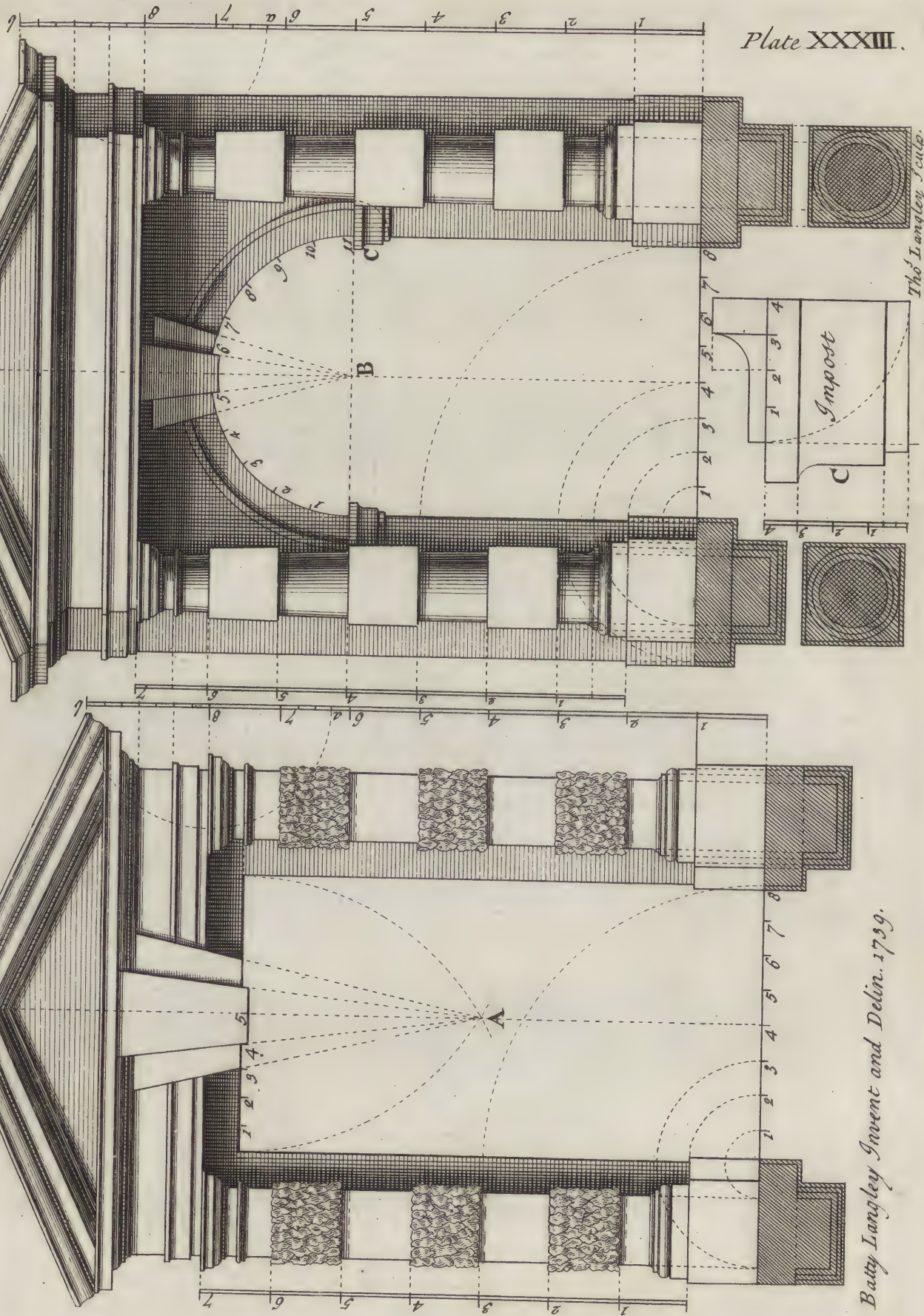








*Tuscan Rusticated Doors, whose Bases  
Capitals and Entablatures are described at large  
in Plates I and II.*



*Plate XXXIII.*

*Thos Langley Sculp.*

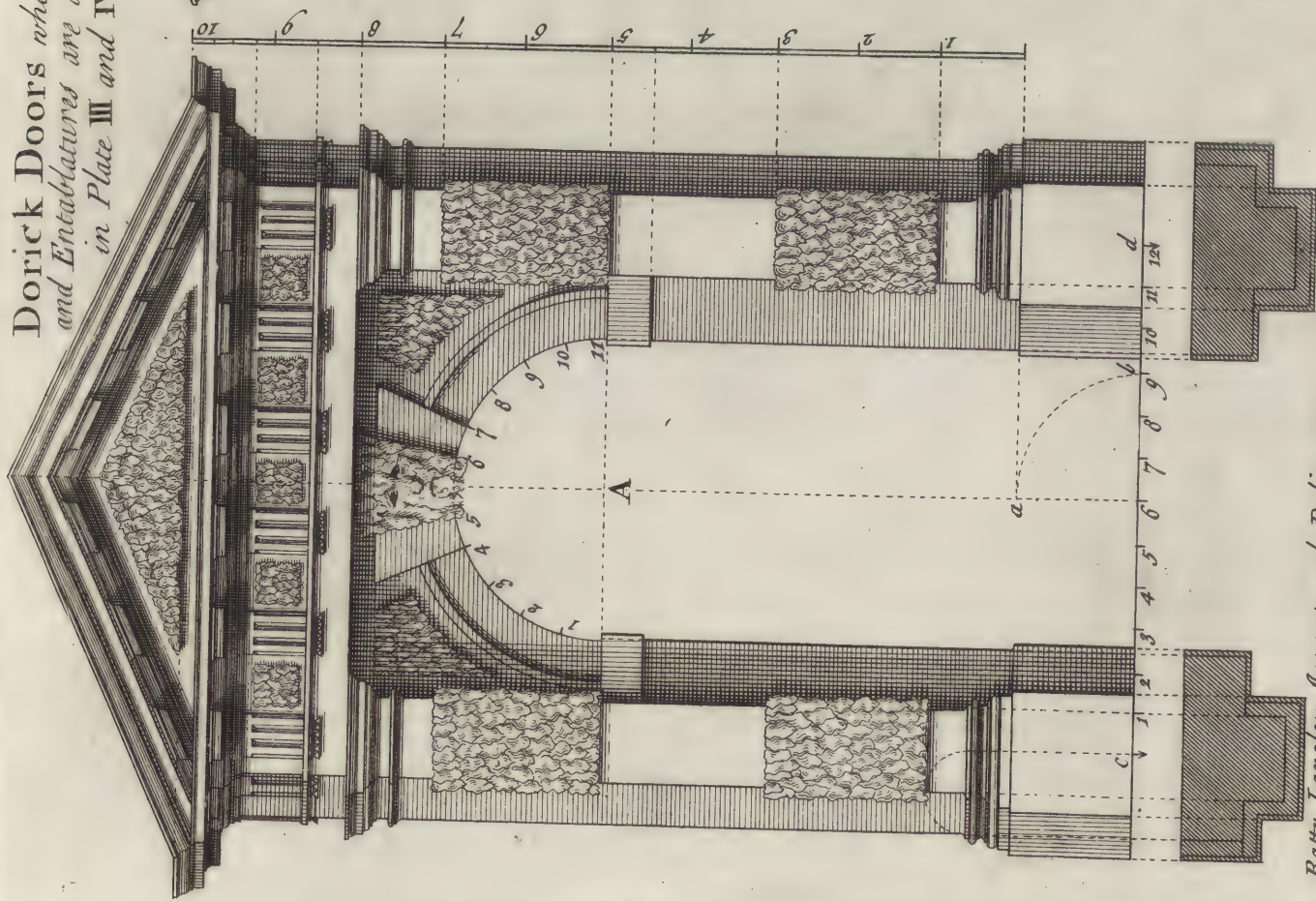
*Batty Langley Invent and Delin. 1739.*



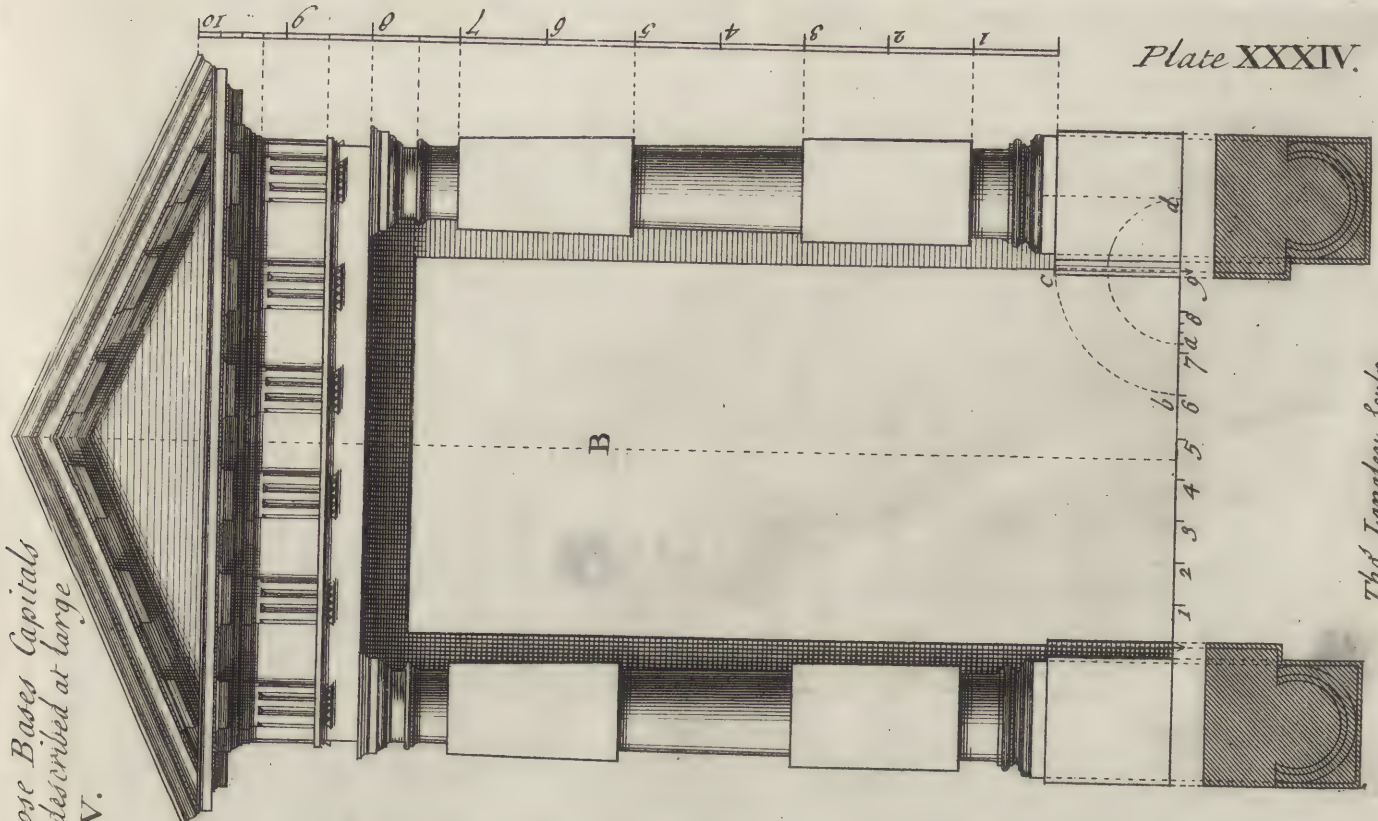




Doric Doors whose Bases Capitals  
and Entablatures are described at large  
in Plate III and IV.



Batty Langley Invent and Delin. 1729.

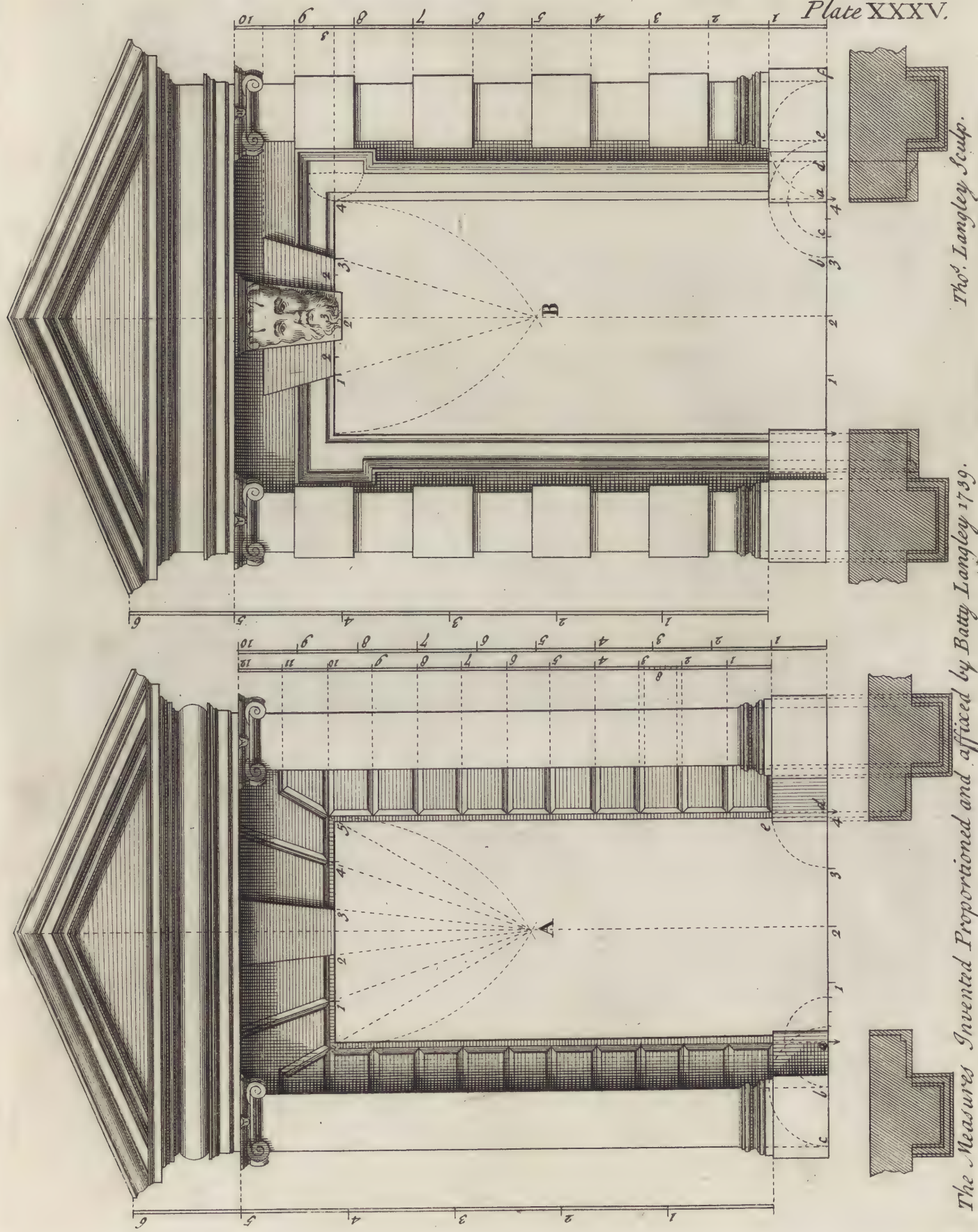


Thos. Langley Sculp.









Tho. Langley Sculp.

The Measures Invented Proportioned and affixed by Battie Langley 1739.







Corinthian Doors whose Bases Capitals  
and Entablatures are described at large  
in Plates IX. X. XI. XII.

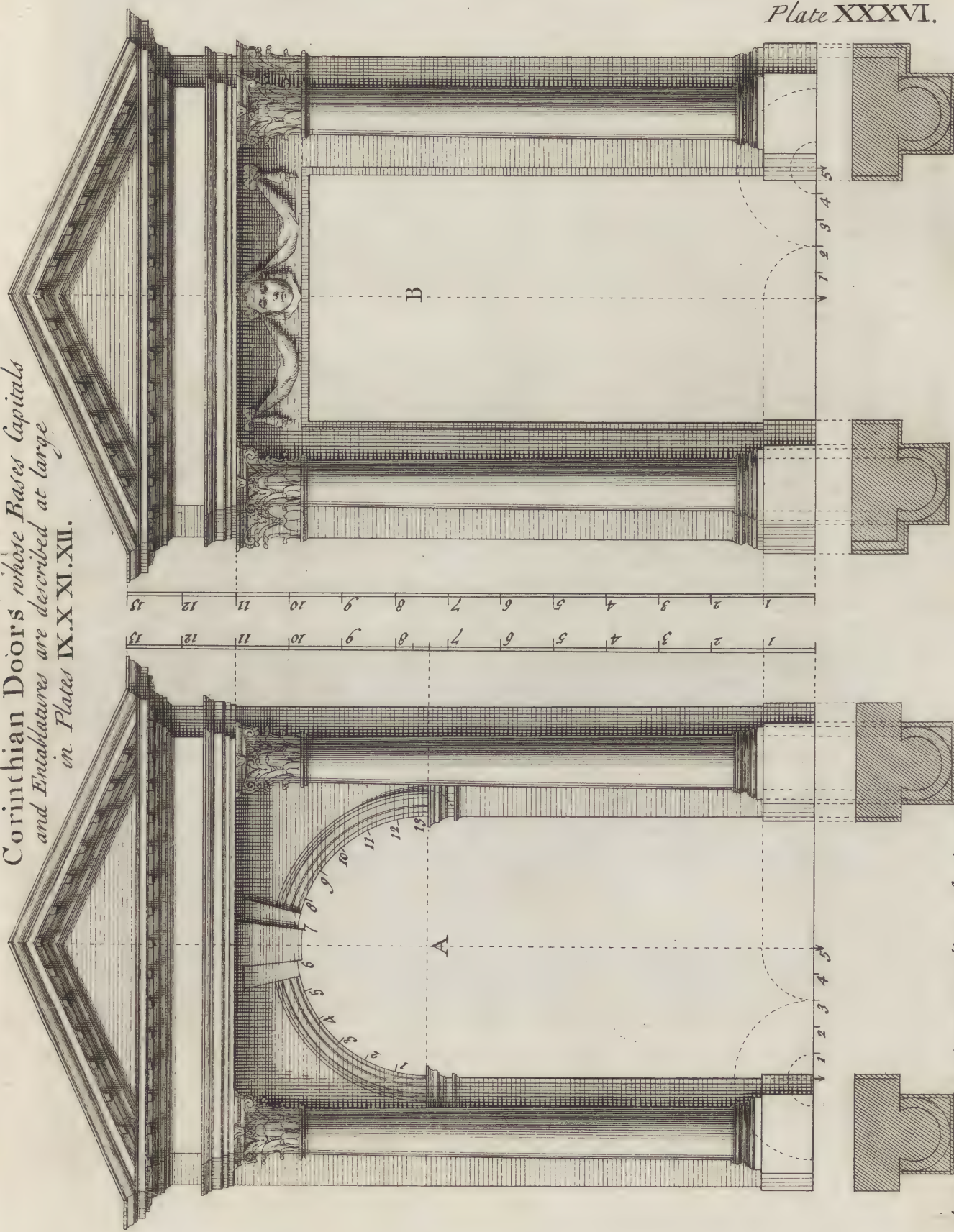


Plate XXXVI.

Thomas Langley Invent. Delin. & Sculp. 1739.

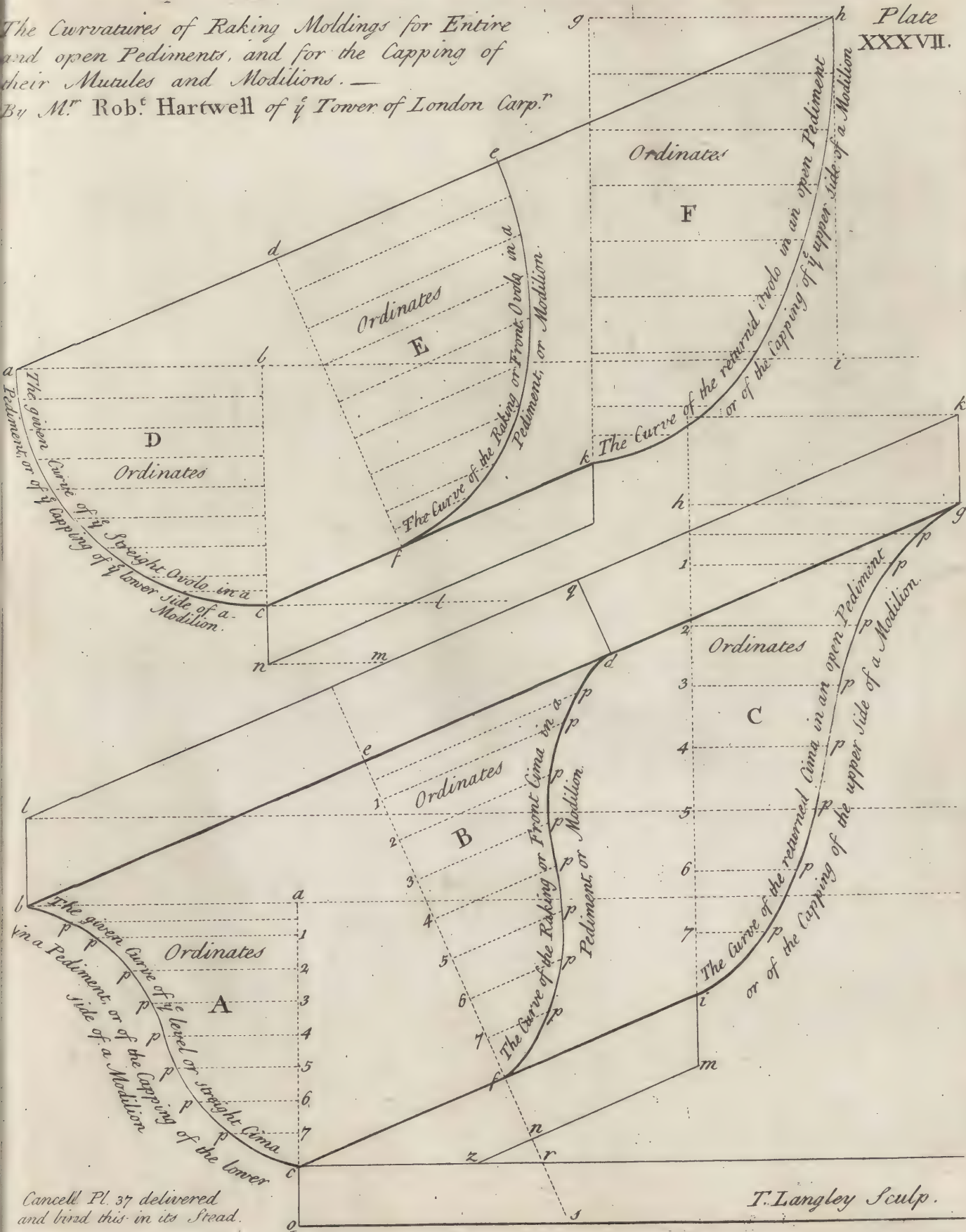






The Curvatures of Raking Mouldings for Entire and open Pediments, and for the Capping of their Mutules and Modillions. —  
By M.<sup>r</sup> Rob.<sup>t</sup> Hartwell of y<sup>e</sup> Tower of London Carp.<sup>r</sup>

Plate  
XXXVII.



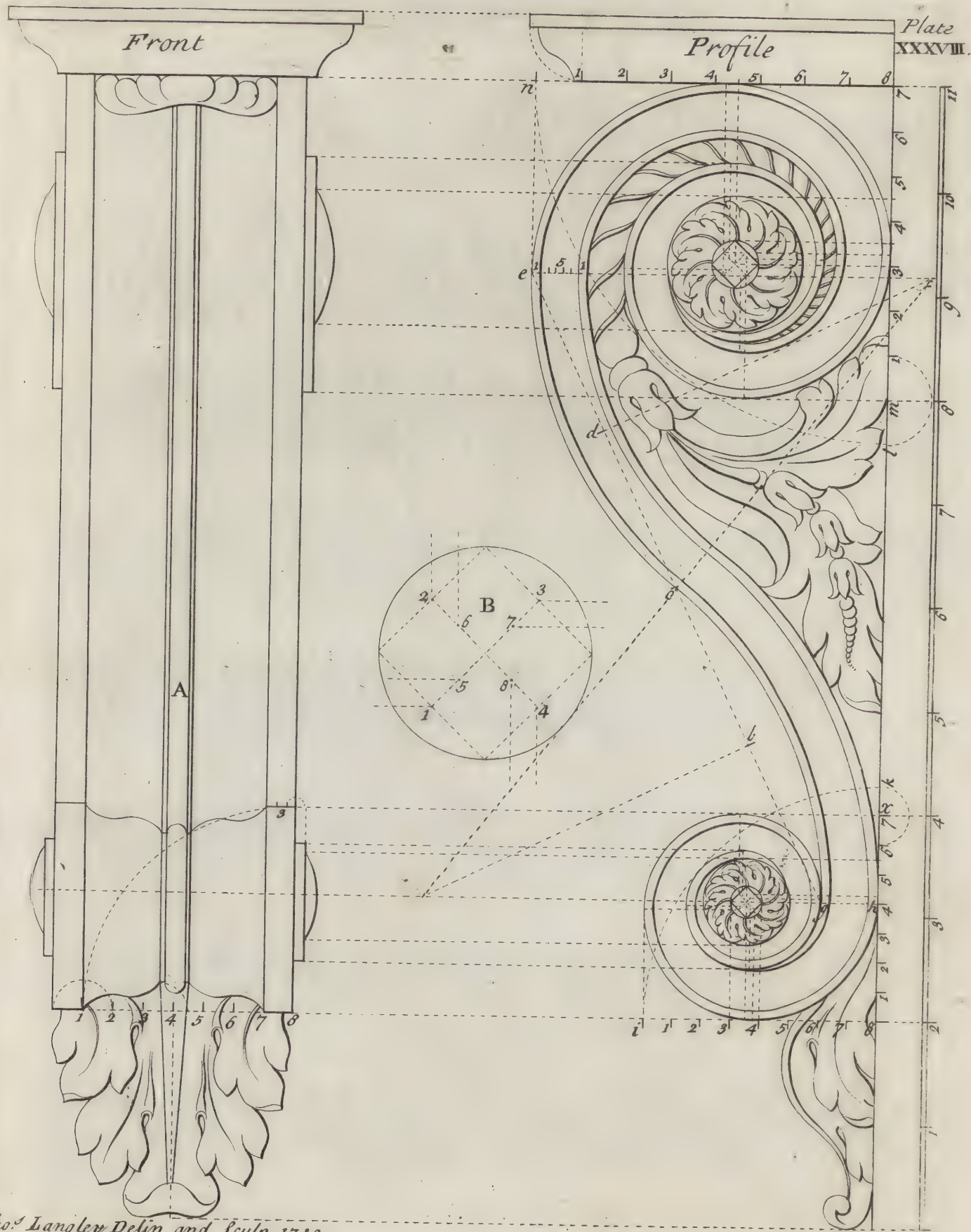
Cancell Pl. 37 delivered  
and bind this in its Sread.

T. Langley Sculp.



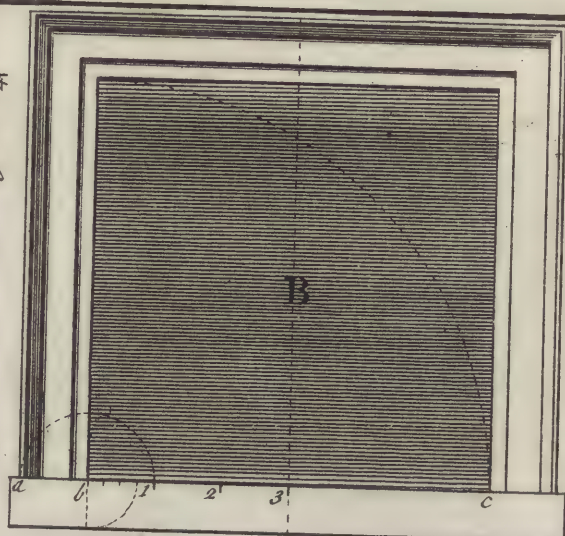
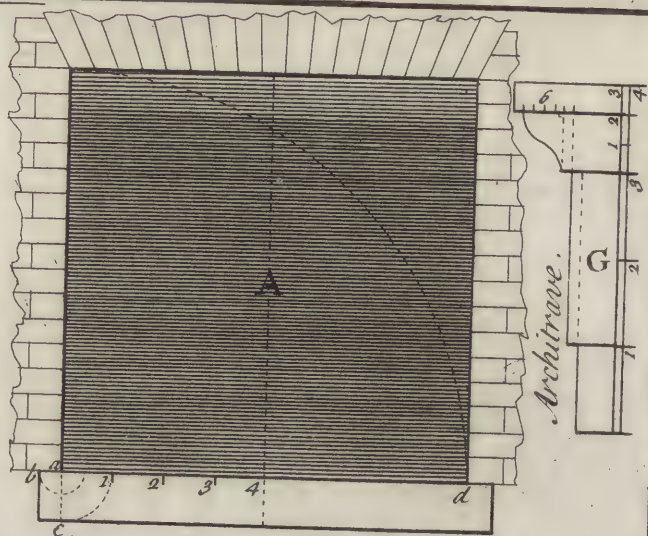
.....



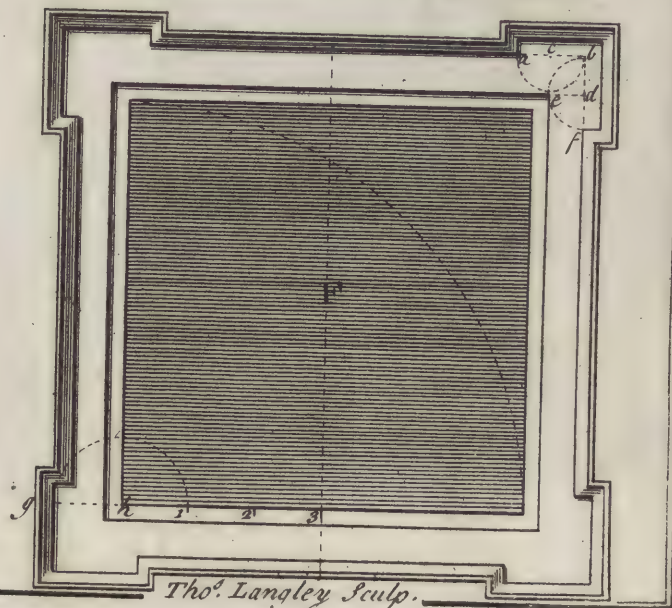
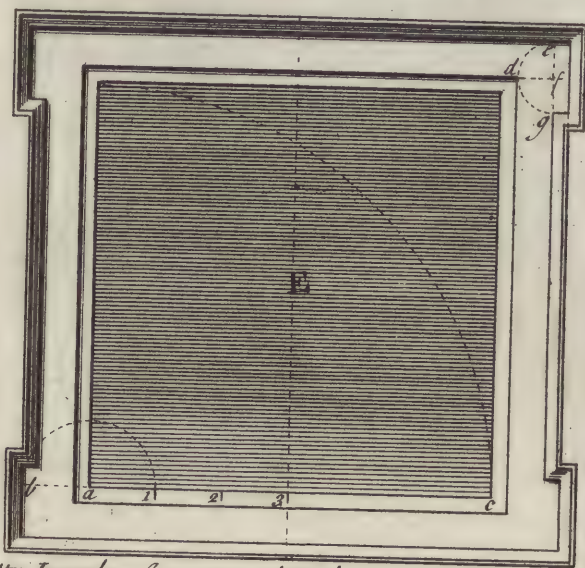
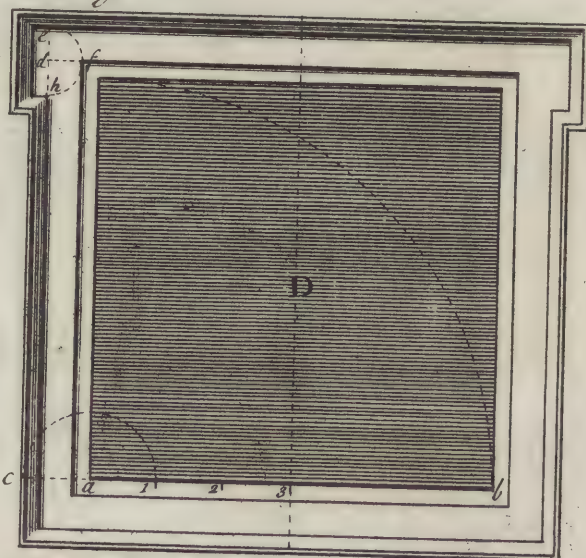
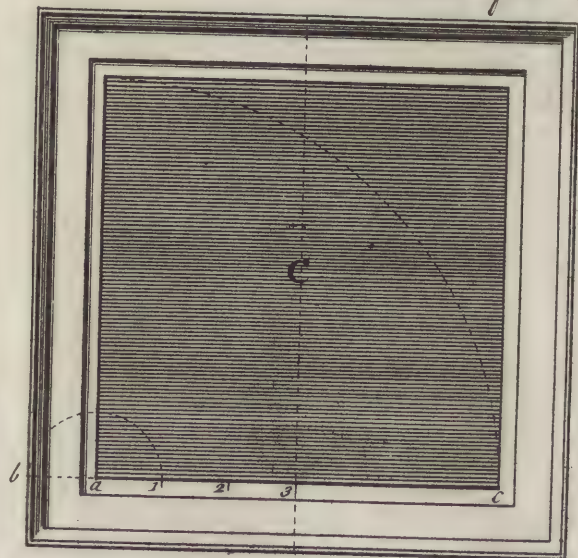






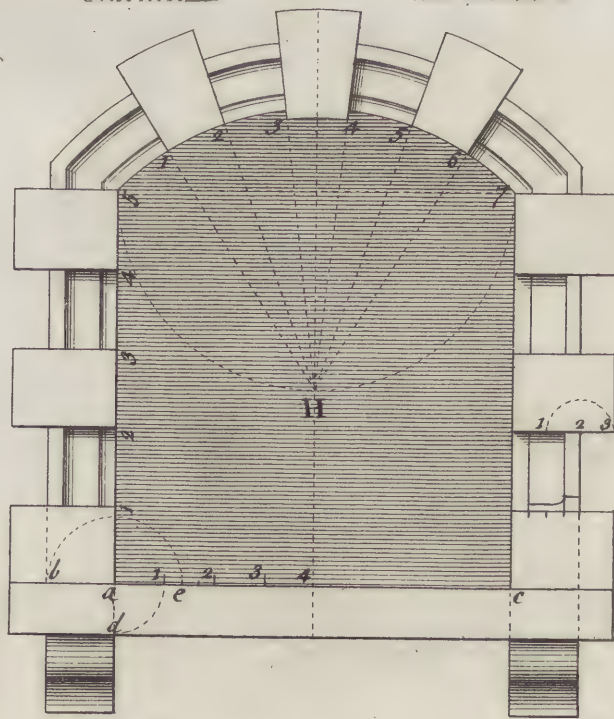
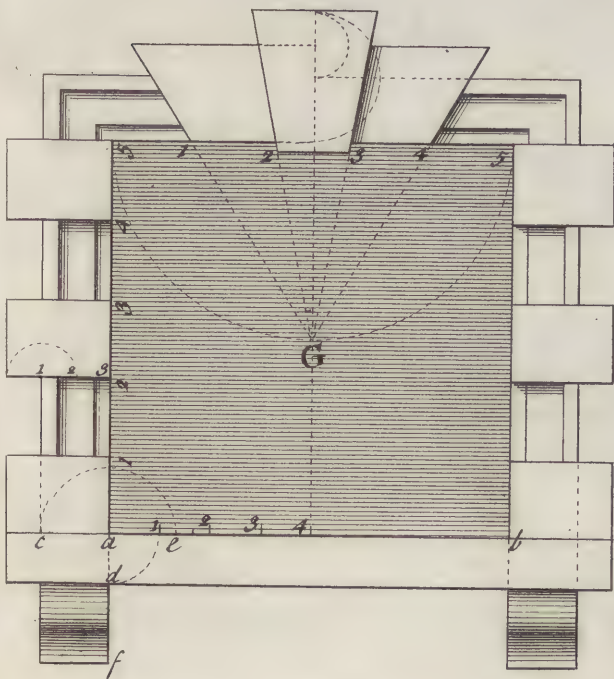
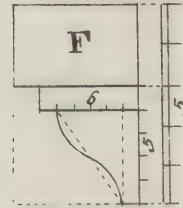
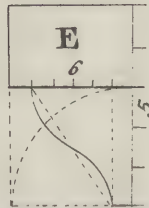
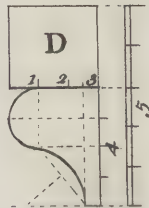
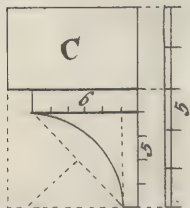
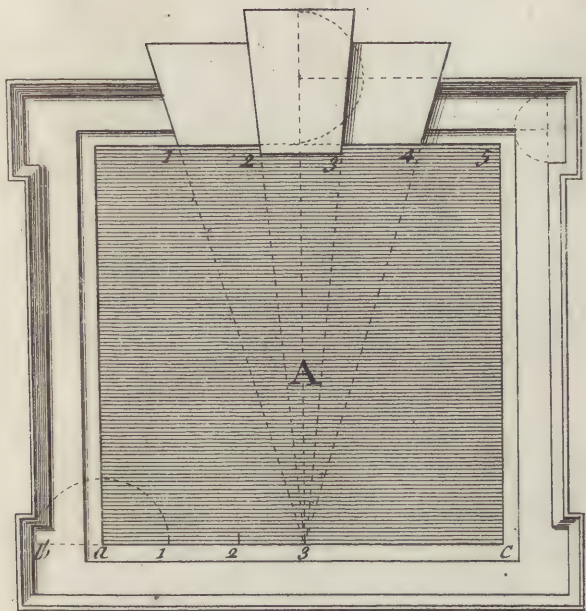


*Windows for Attick Storys.*







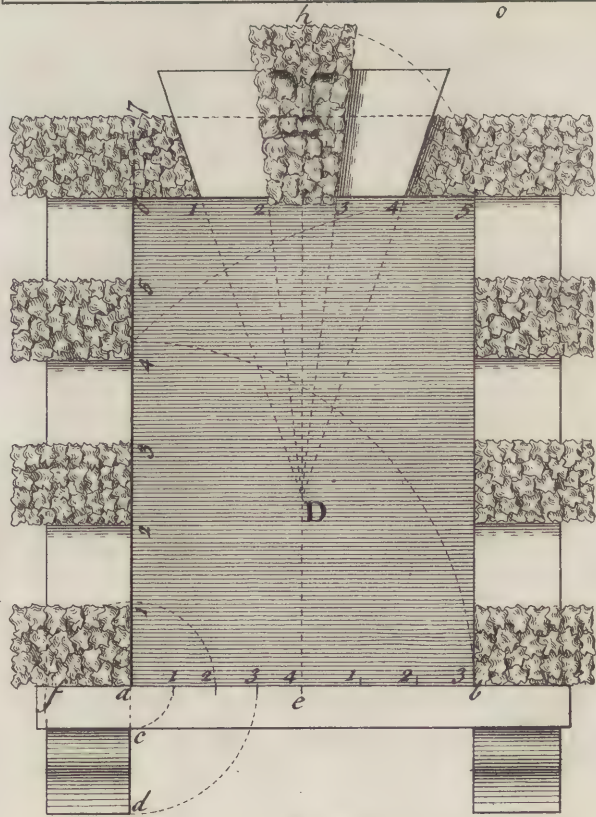
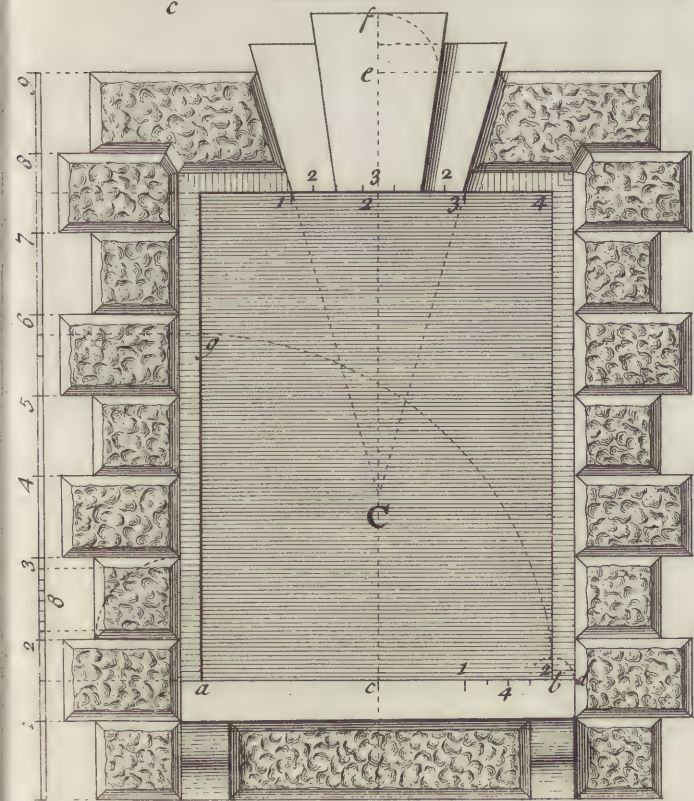
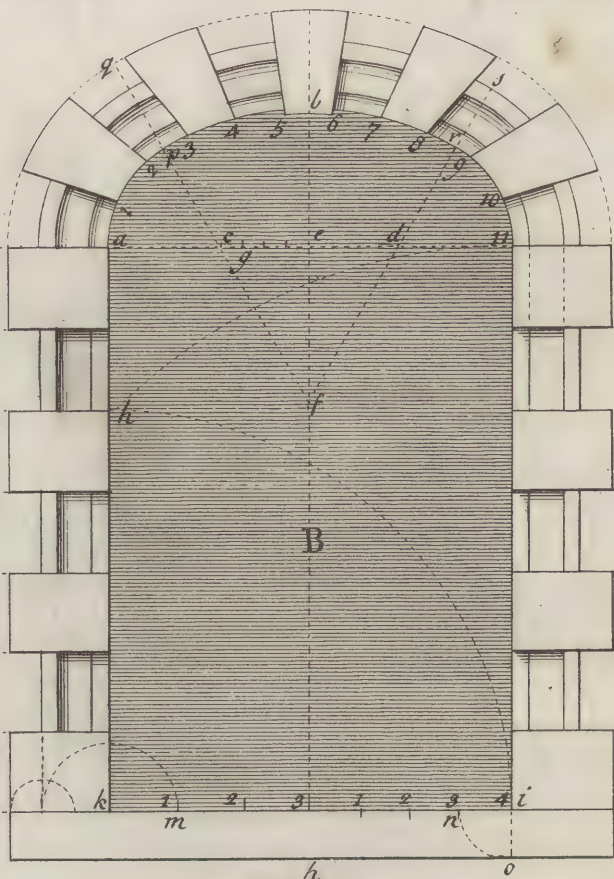
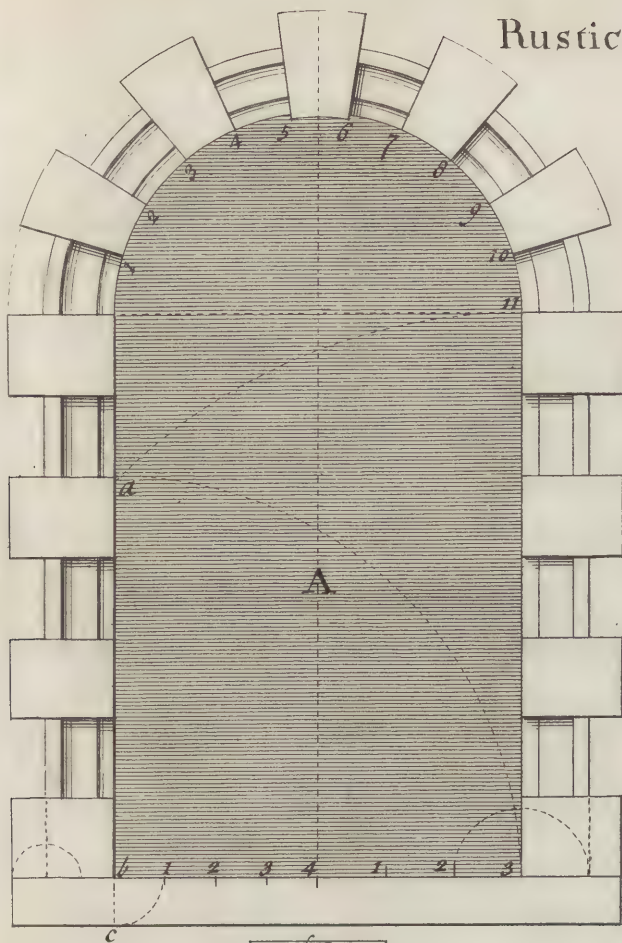






# Rusticated Windows.

Plate XLII.



Batty Langley Invent and Delin. 1739.

Tho.<sup>s</sup> Langley Sculp.





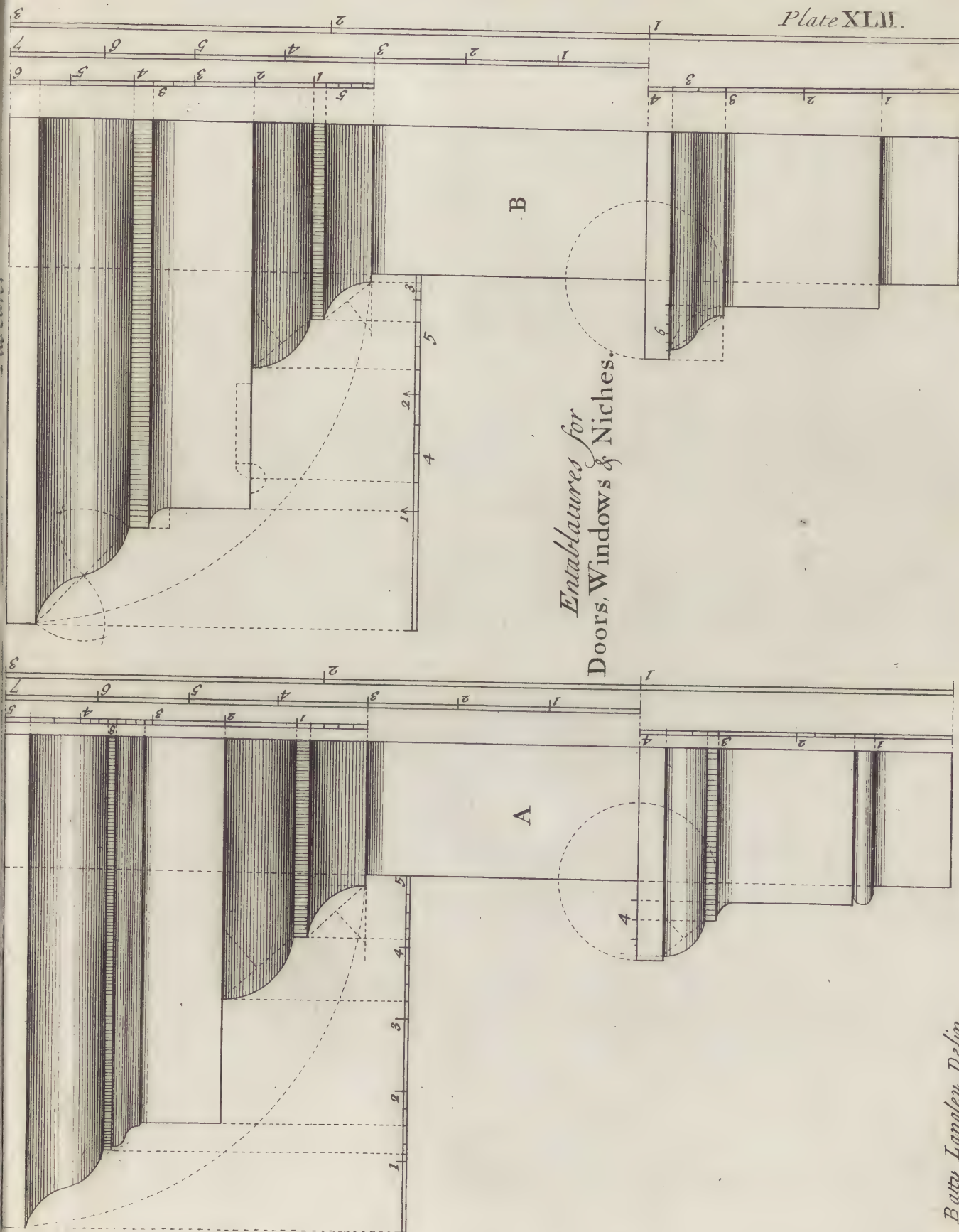
Tho<sup>s</sup> Langley Sculp.

*Entablatures for  
Doors, Windows & Niches.*

B

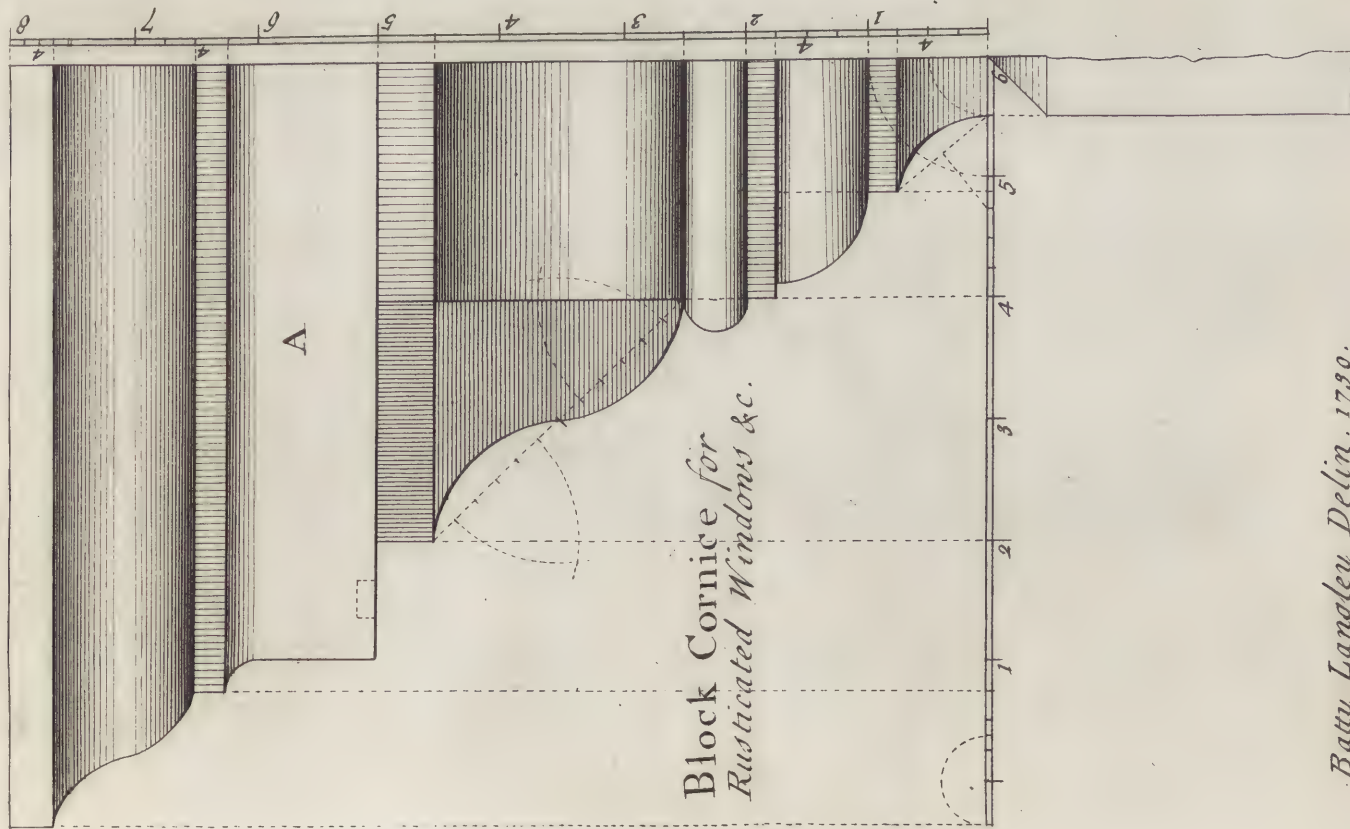
A

Batty Langley Delin.



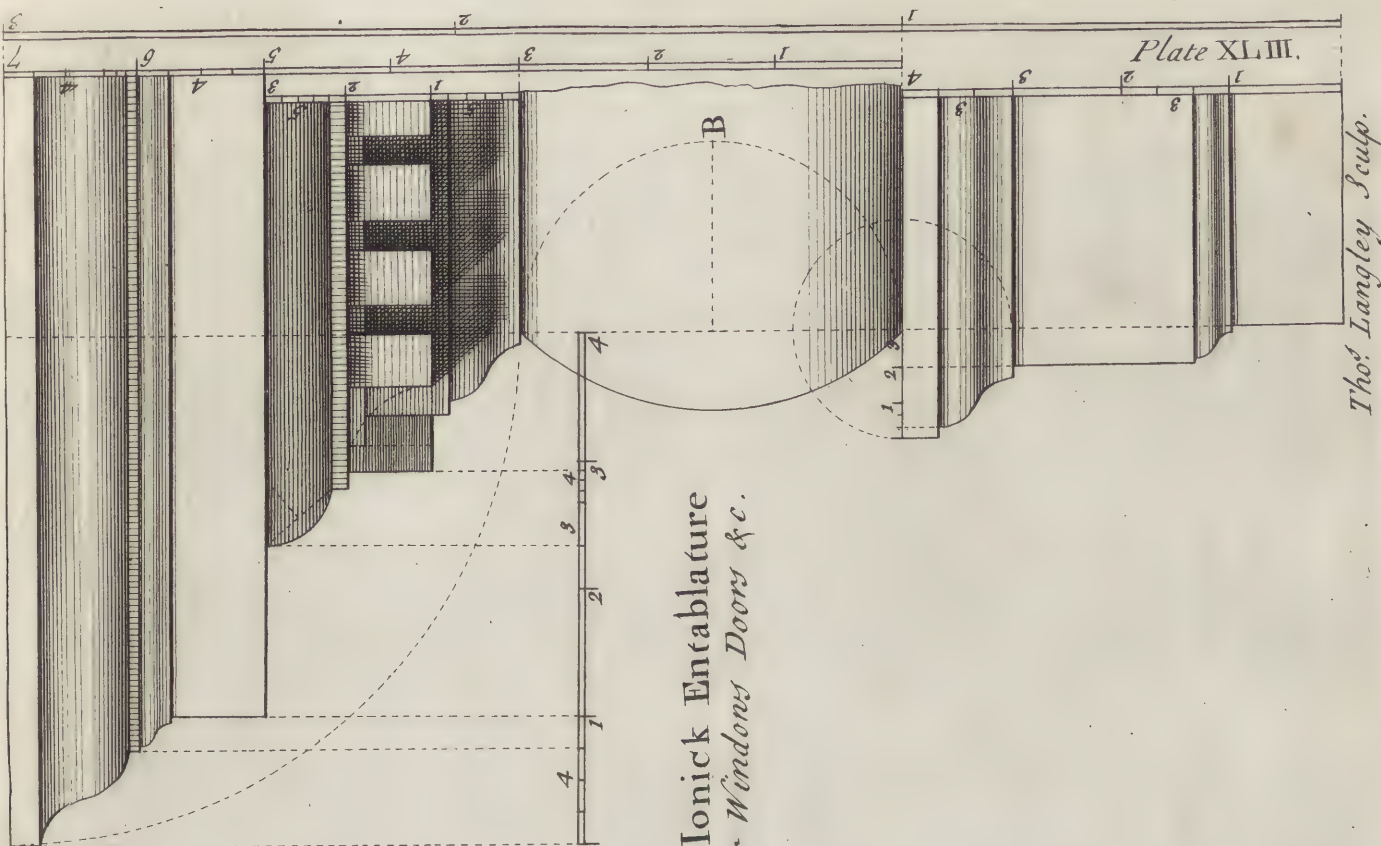






Block Cornice for  
Rusticated Windows &c.

Batty Langley Delin. 1730.



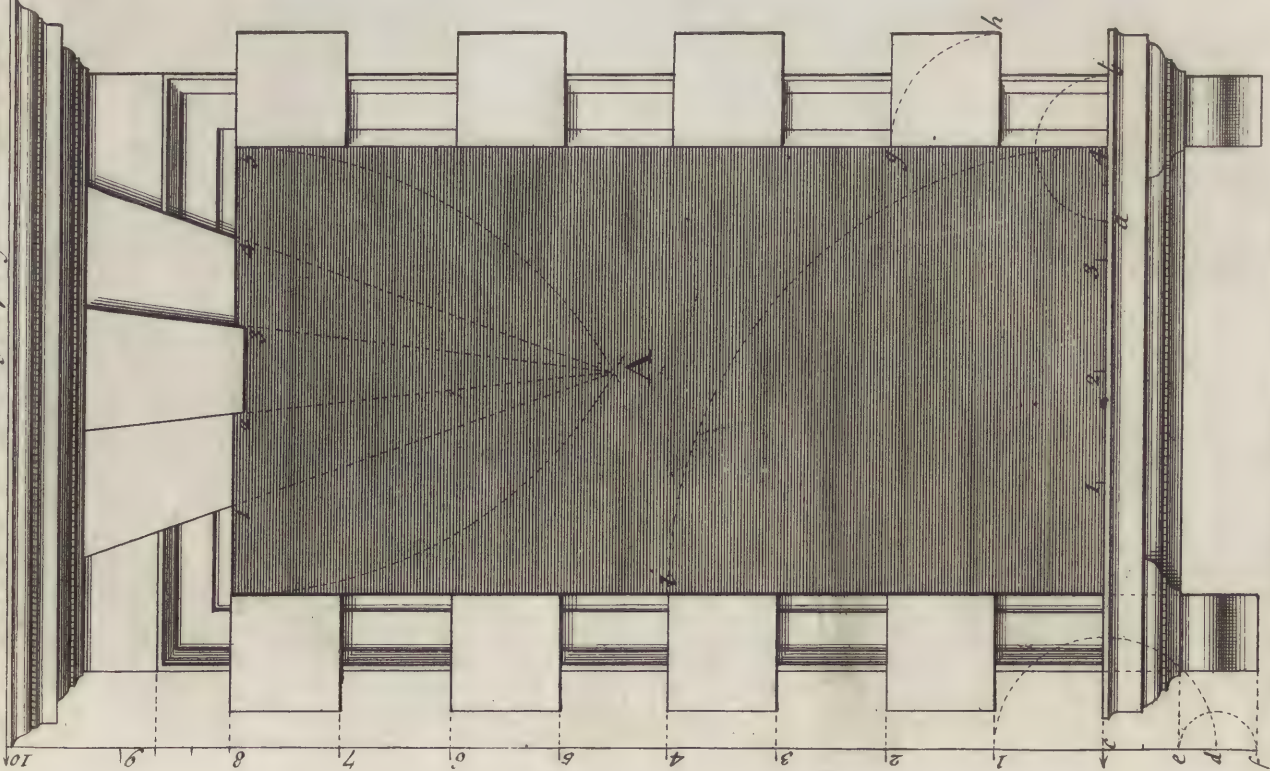
Ionick Entablature  
for Windows Doors &c.

Thos. Langley Sculp.





Rusticated Windows.  
This Cornice is described at large by Figure B. Plate XLII.



Batty Langley Invent & Delin. 1730.

Window's.  
This Cornice is described at large in Plate XLIII.

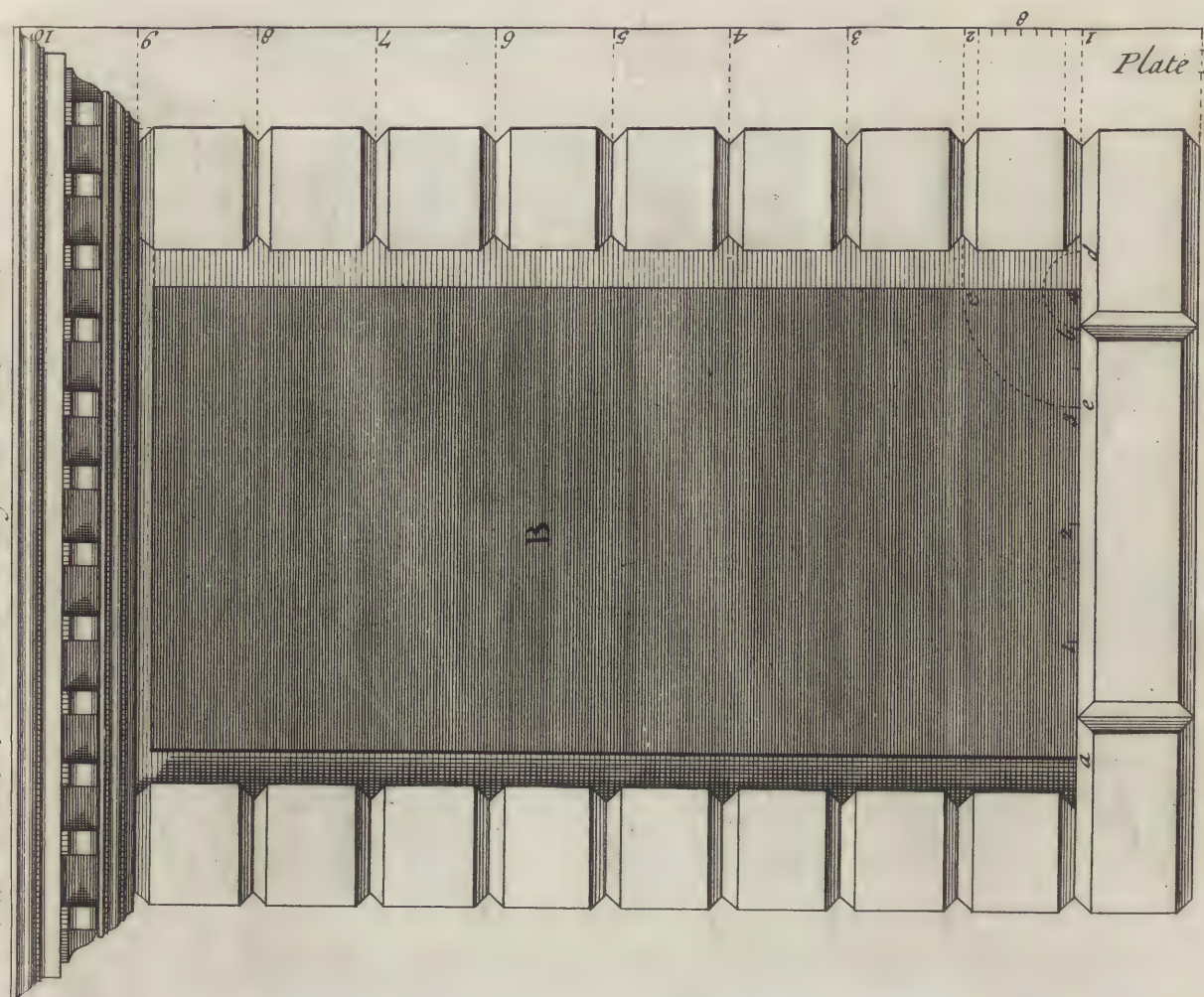


Plate XLIV.

Tho. Langley Sculp.





The Entablatures of these Windows are  
Described at large in Plate XLIII.

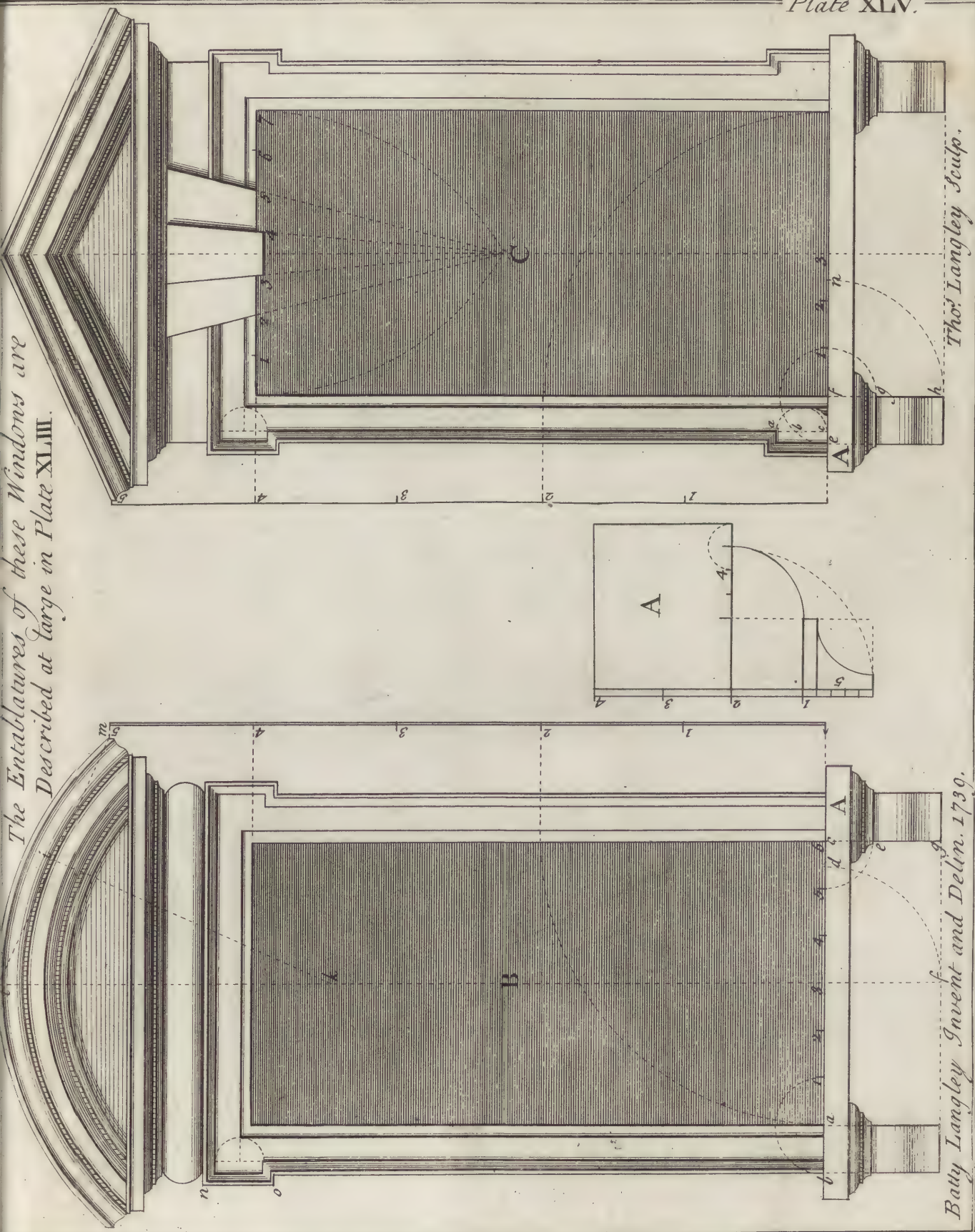


Plate XLV.

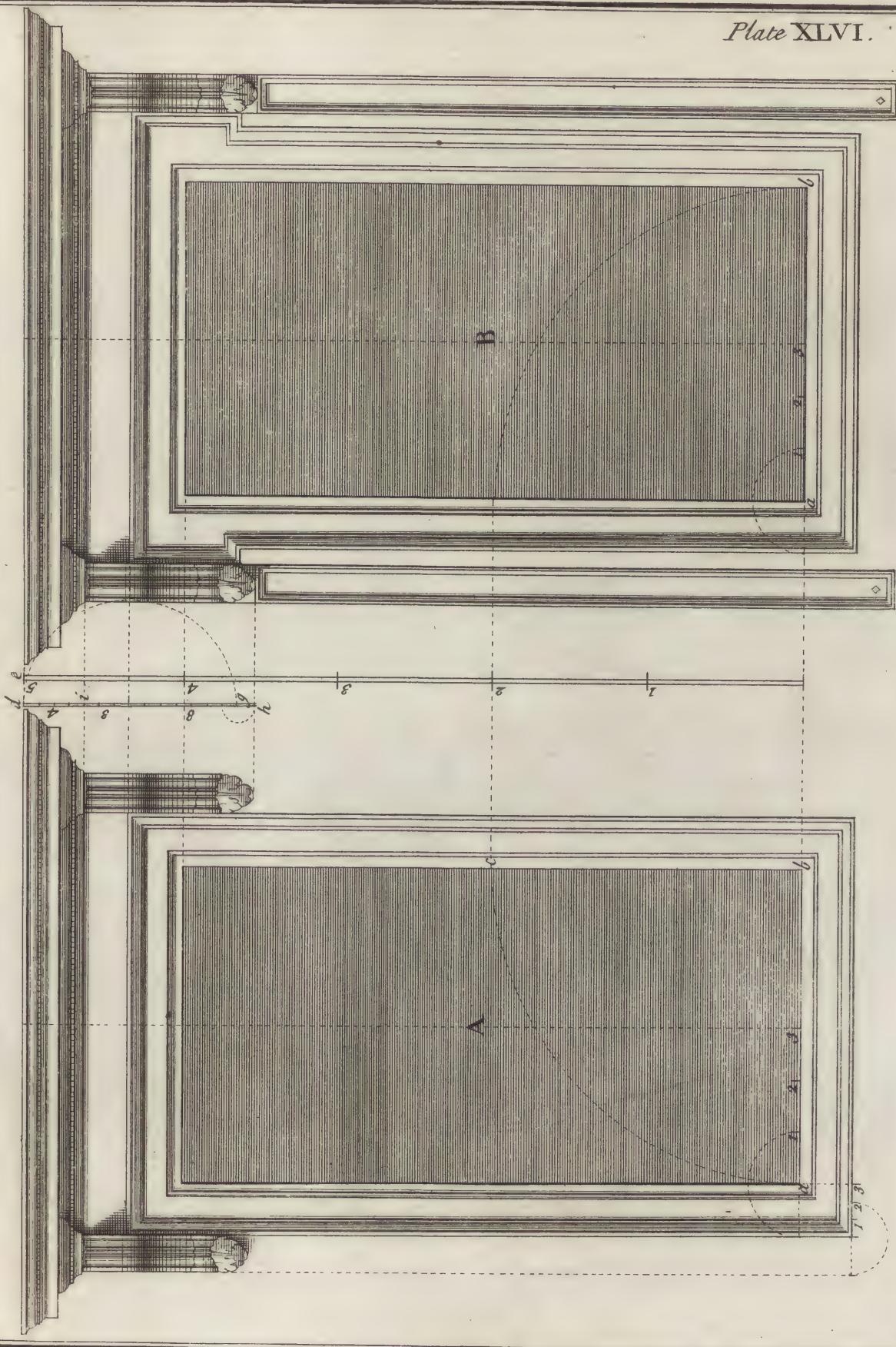
Thor Langley Sculp.

Batty Langley Invent and Delin. 1739.





*These Entablatures are described at large by Figure A. Plate XLII.*



*Plate XLVI.*

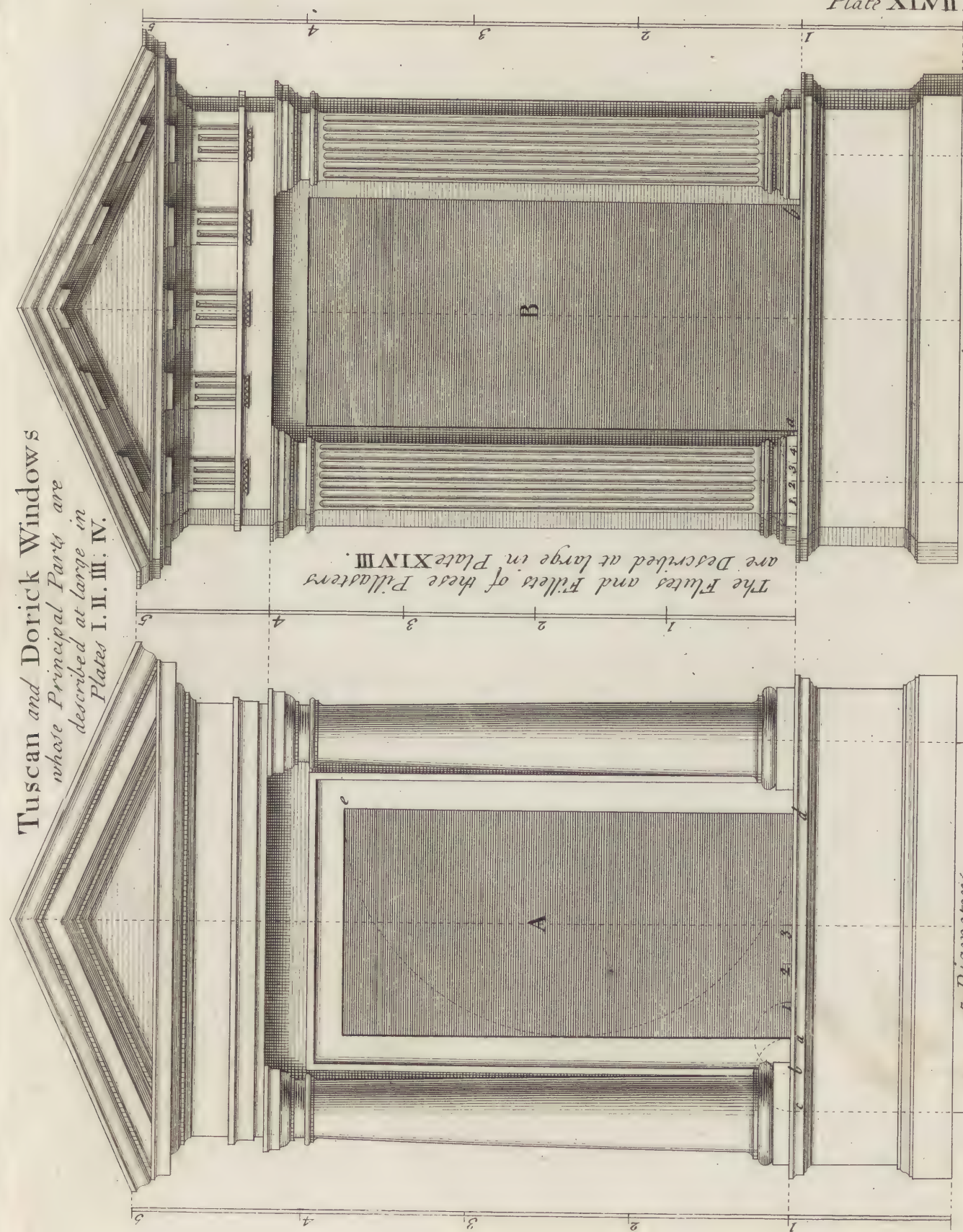
*Tho<sup>s</sup> Langley Sculp.*

*Blatty Langley Invent and Delin. 1739.*





Tuscan and Dorick Windows  
 whose Principal Parts are  
 described at large in  
 Plates I. II. III. IV.



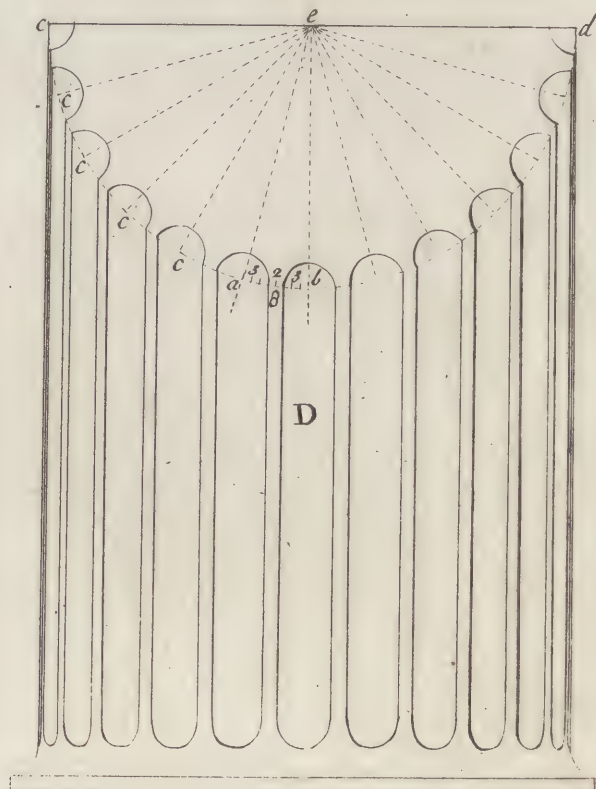
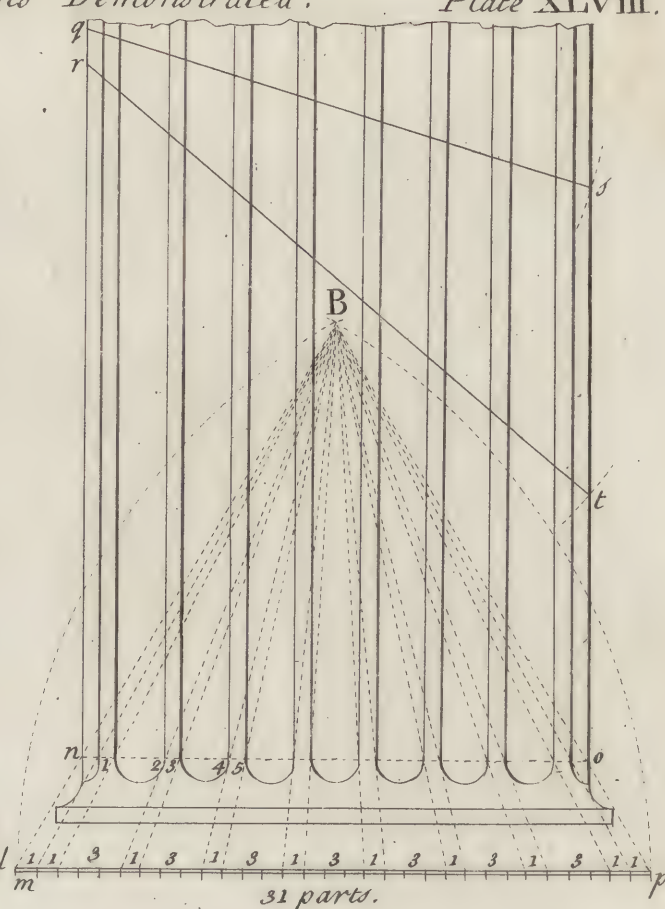
Butty Langley Invent and Delin. 1739.

5 Diameters. Tho: Langley Sculp.





*Plate XLVIII.*



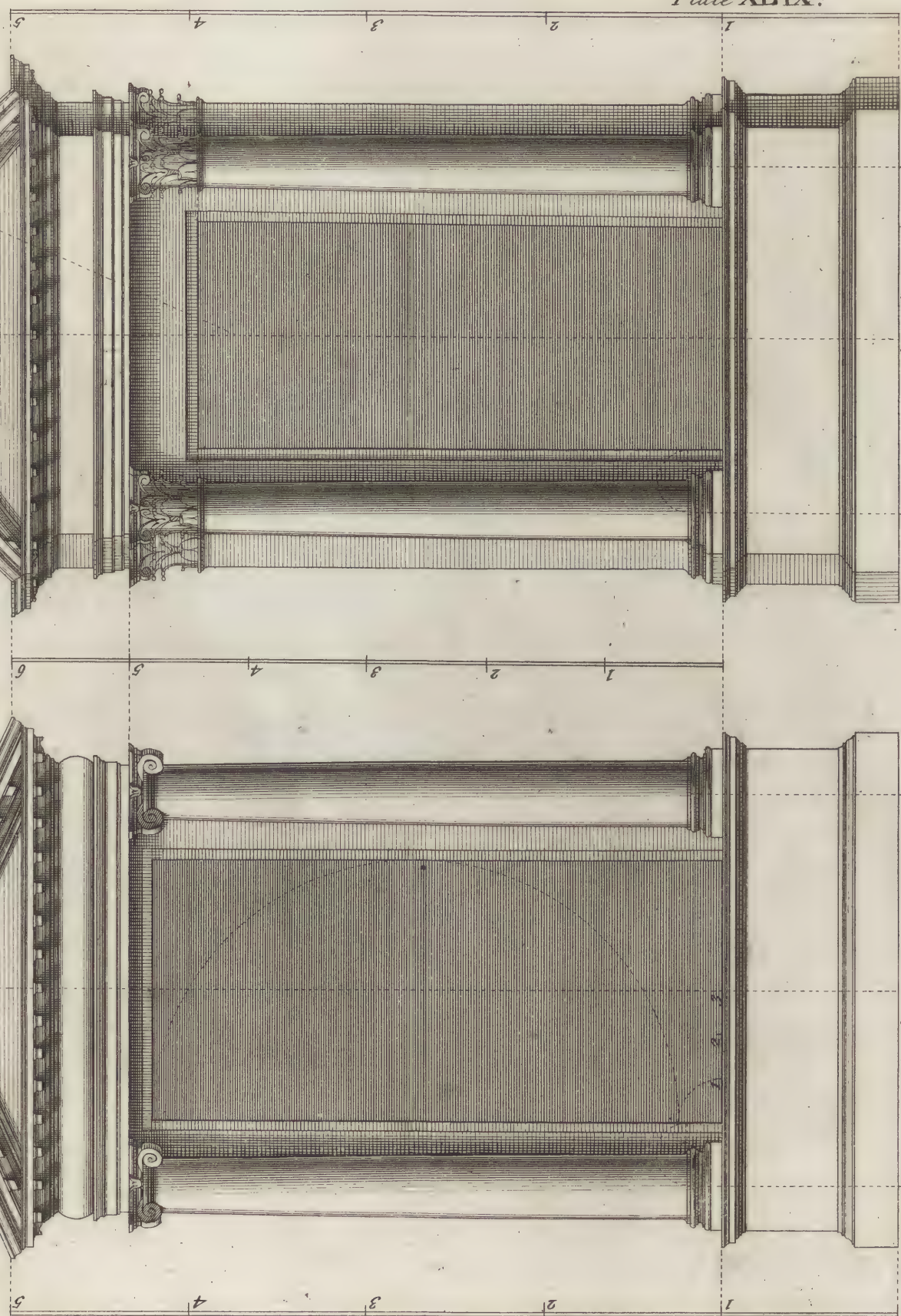
Thos Langley Sculp.





**Ionick and Corinthian Windows**  
*whose Members are described  
at large in Plates*

*V. VI. and IX. X. XI.*



*Plate XLIX.*

*Tho.<sup>s</sup> Langley Sculp.*

*5 Diam:  $\frac{5}{6}$*

*Batty Langley Invent and Delin.*





Windows whose Cornices are described  
at large in Plate XLIII. Fig. B. and  
Truss's in Plate XXXVIII.

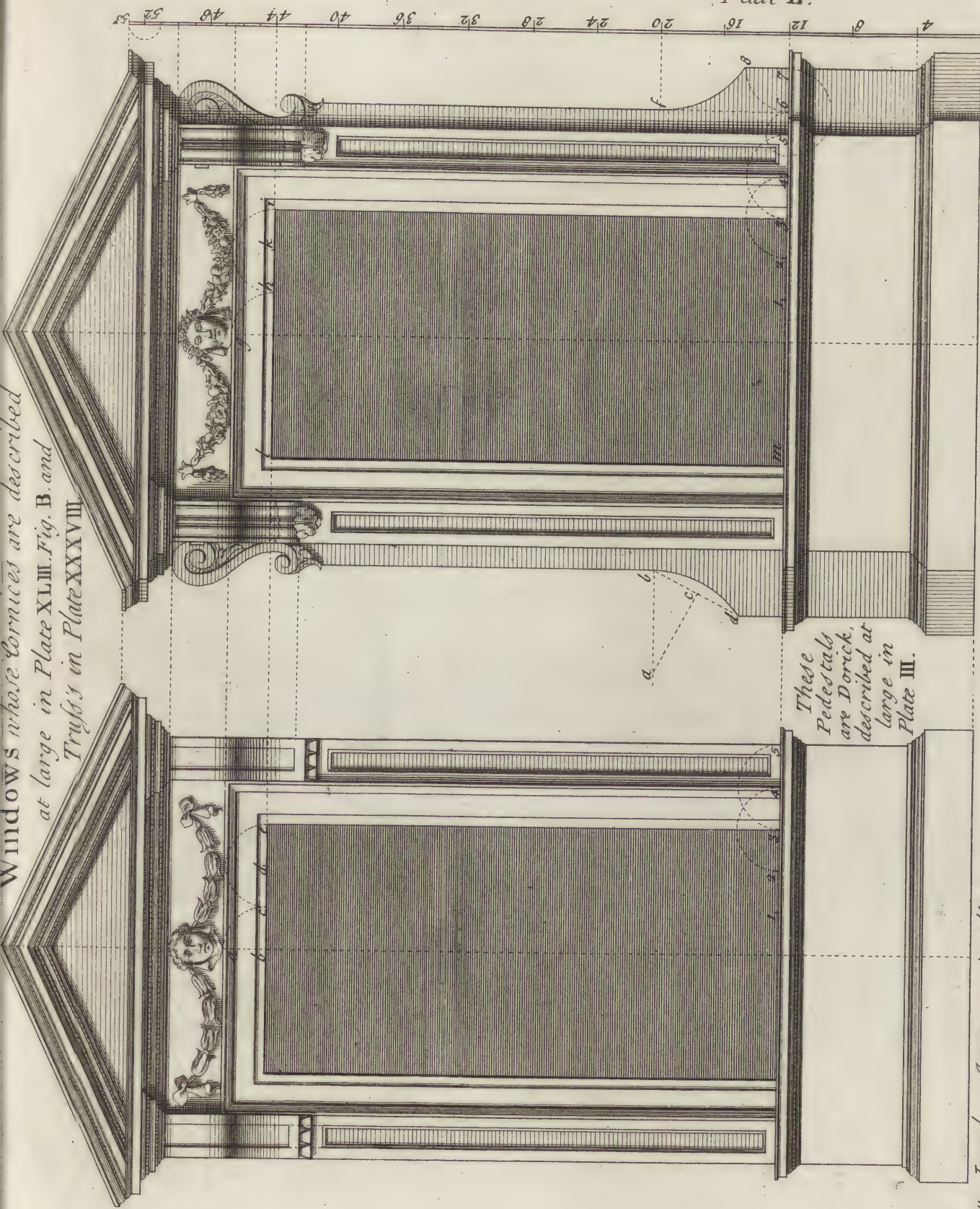


Plate L.

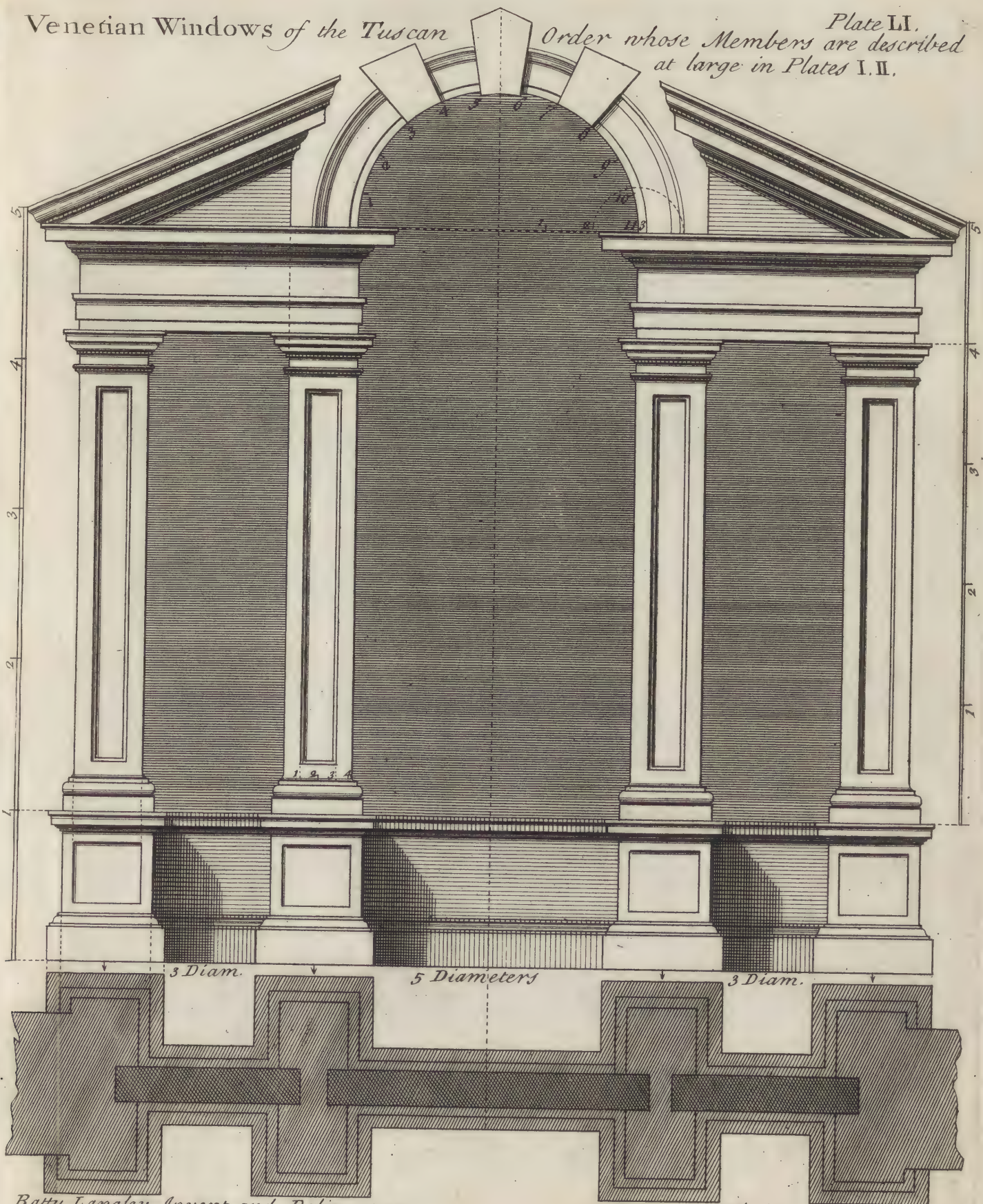
Batty Langley Invent and Delin. 1739.

Tho. Langley Sculp.





Venetian Windows of the Tuscan Order whose Members are described at large in Plates I. II. Plate LI.



Batty Langley Invent and Delin. 1739.

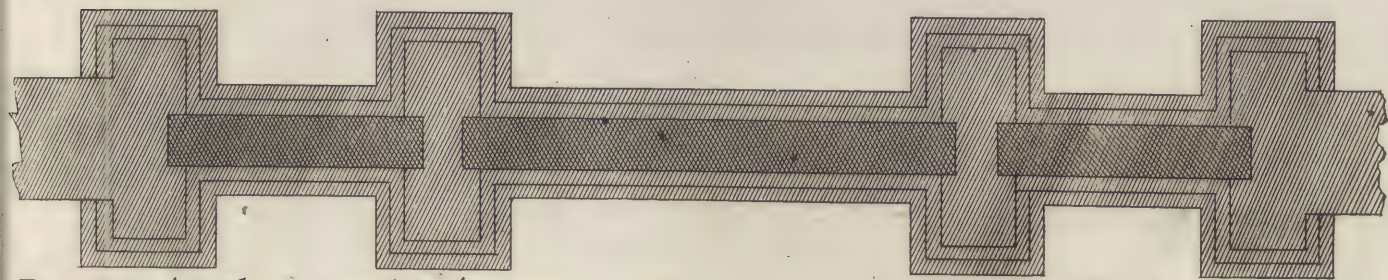
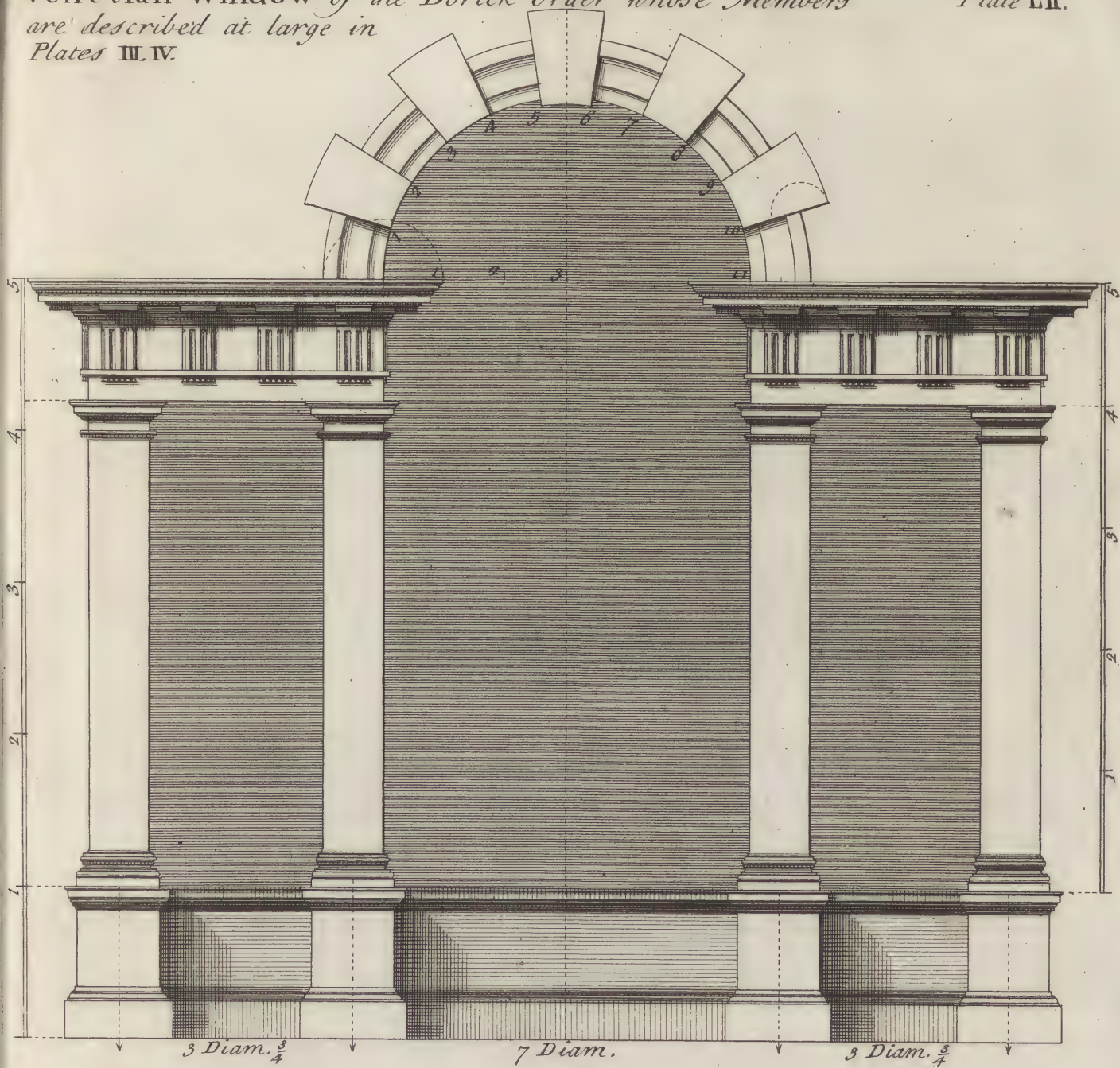
Tho<sup>s</sup>. Langley Sculp.





Venetian Window of the Dorick Order whose Members  
are described at large in  
Plates III. IV.

Plate LII.



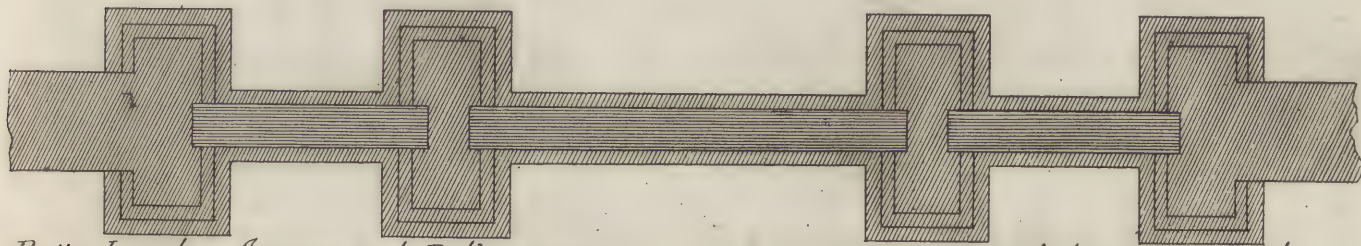
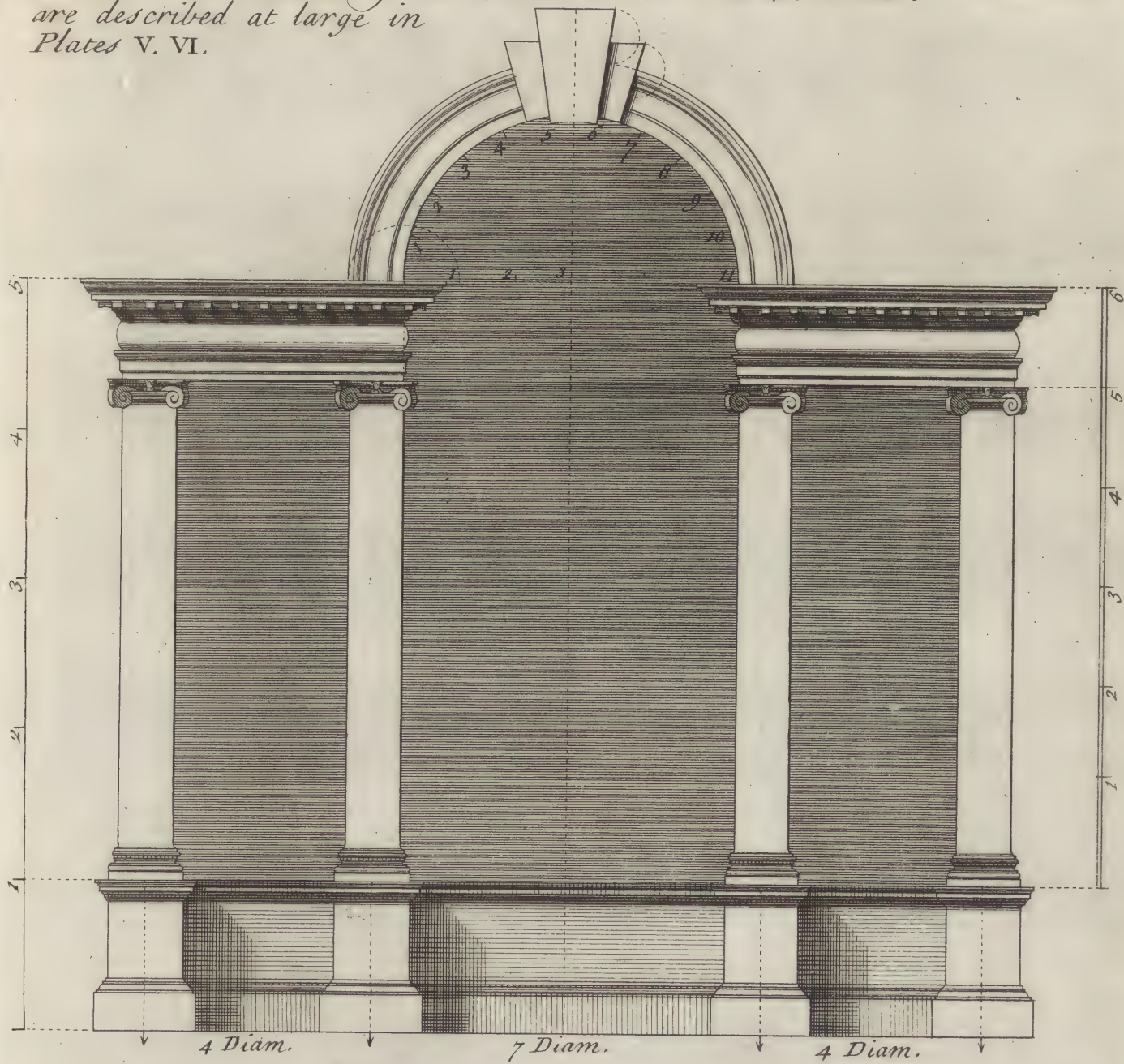
Batty Langley Invent and Delin. 1739.

Tho.<sup>d</sup> Langley Sculp.





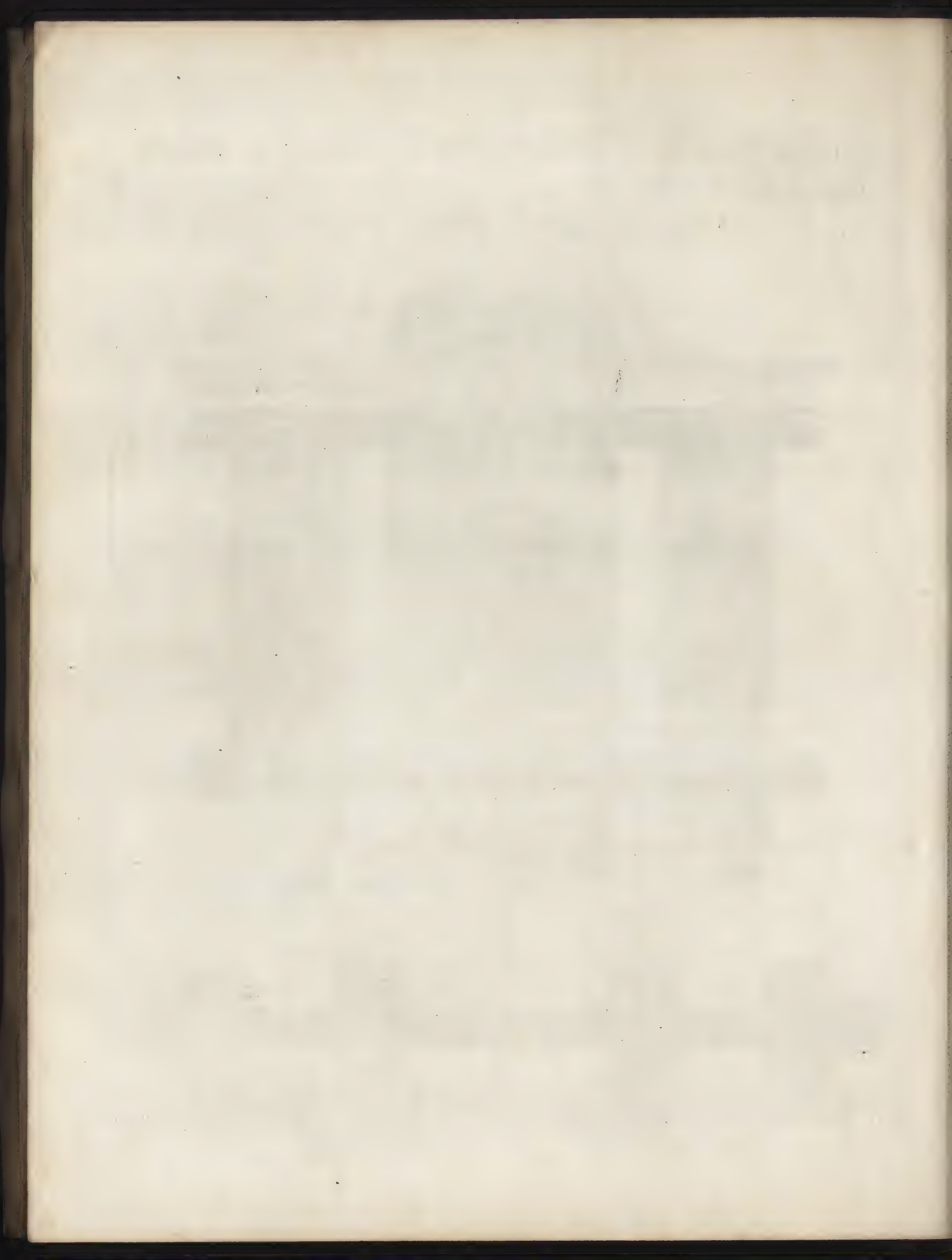
Venetian Windows of the Ionick Order whose Members Plate LIII  
are described at large in  
Plates V. VI.



Batty Langley Invent and Delin. 1739.

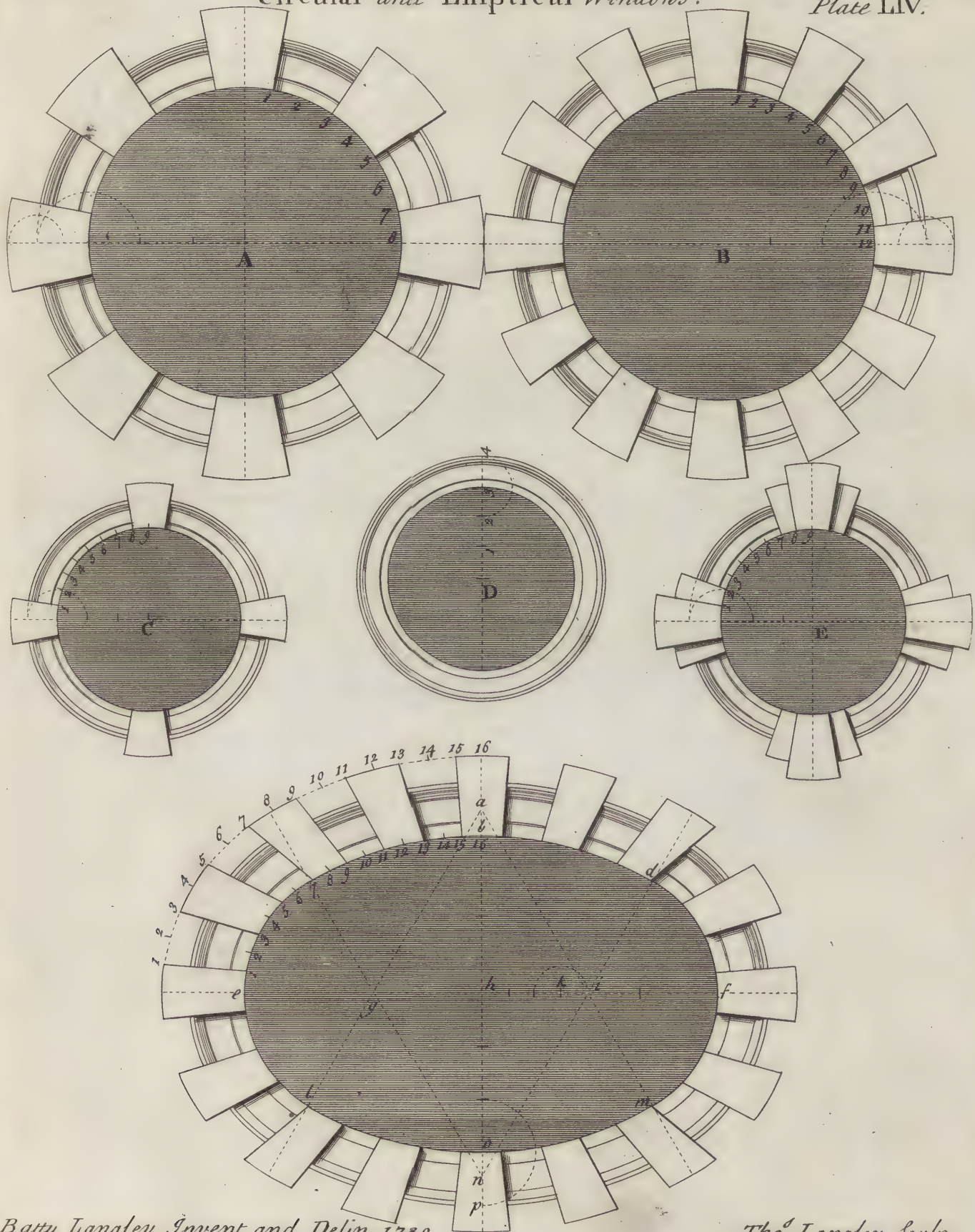
Tho<sup>d</sup> Langley Sculp.





Circular and Elliptical Windows.

Plate LIV.



Batty Langley Invent and Delin. 1739.

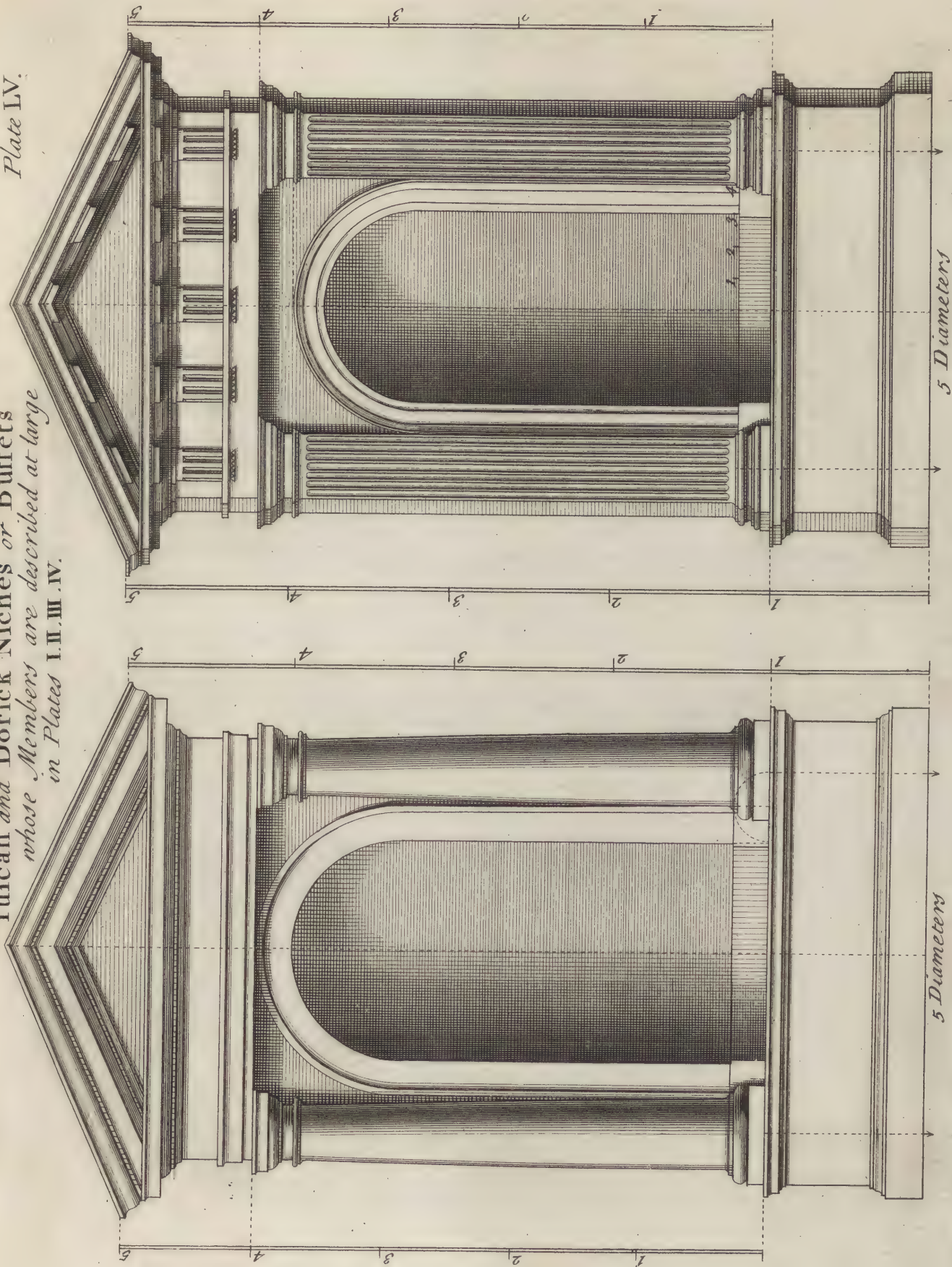
Tho<sup>d</sup>. Langley Sculp.





Tuscan and Dorick Niches or Buffets  
 whose Members are described at large  
 in Plates I. II. III. IV.

Plate LV.



5 Diameters

Batty Langley Invent and Delin. 1739.

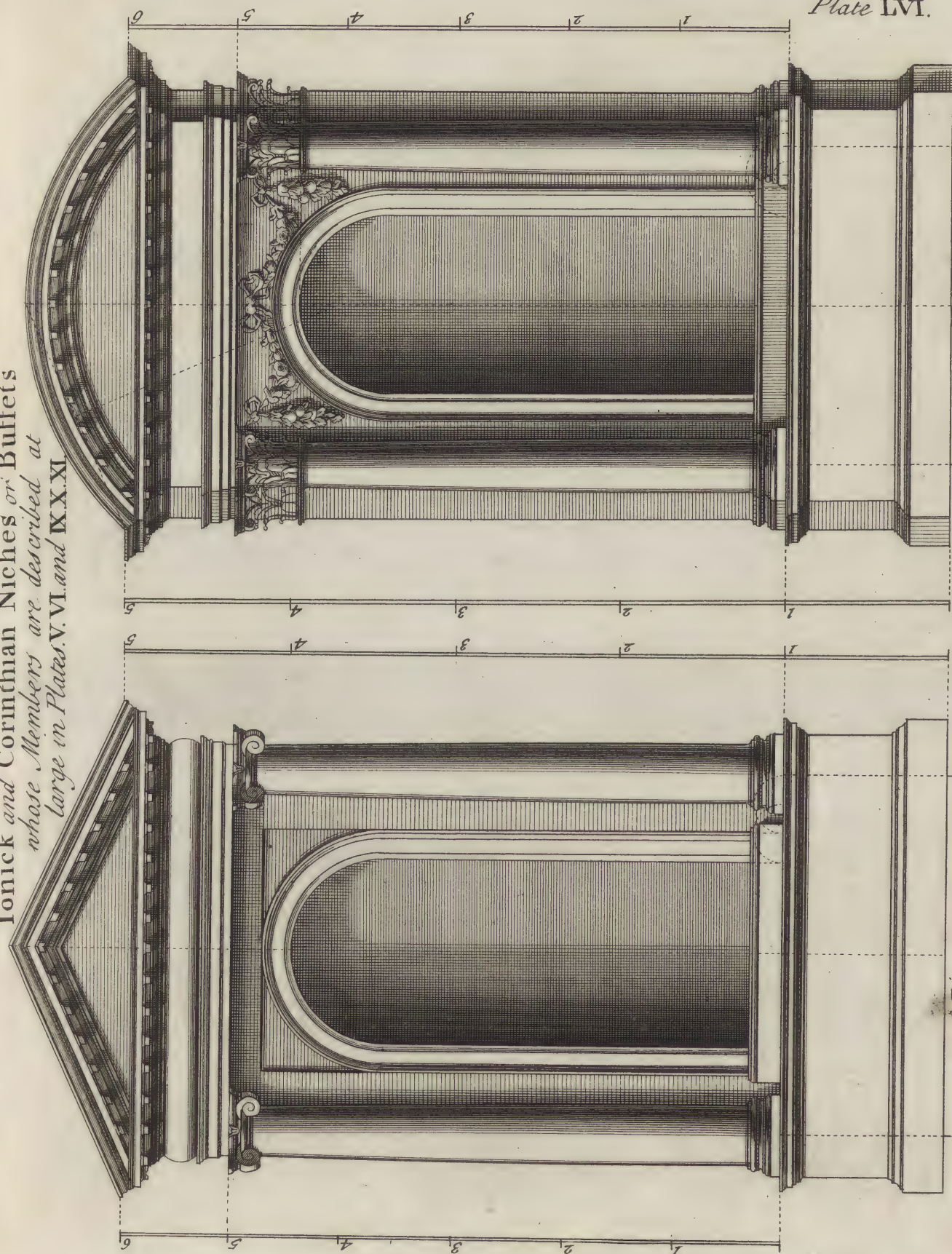
5 Diameters

Tho. Langley Sculp.





Ionick and Corinthian Niches or Buffets  
 whose Members are described at  
 large in Plates V. VI. and IX. X. XI.



6 Diameters  
 Battis Langley Invent and Delin. 1739.

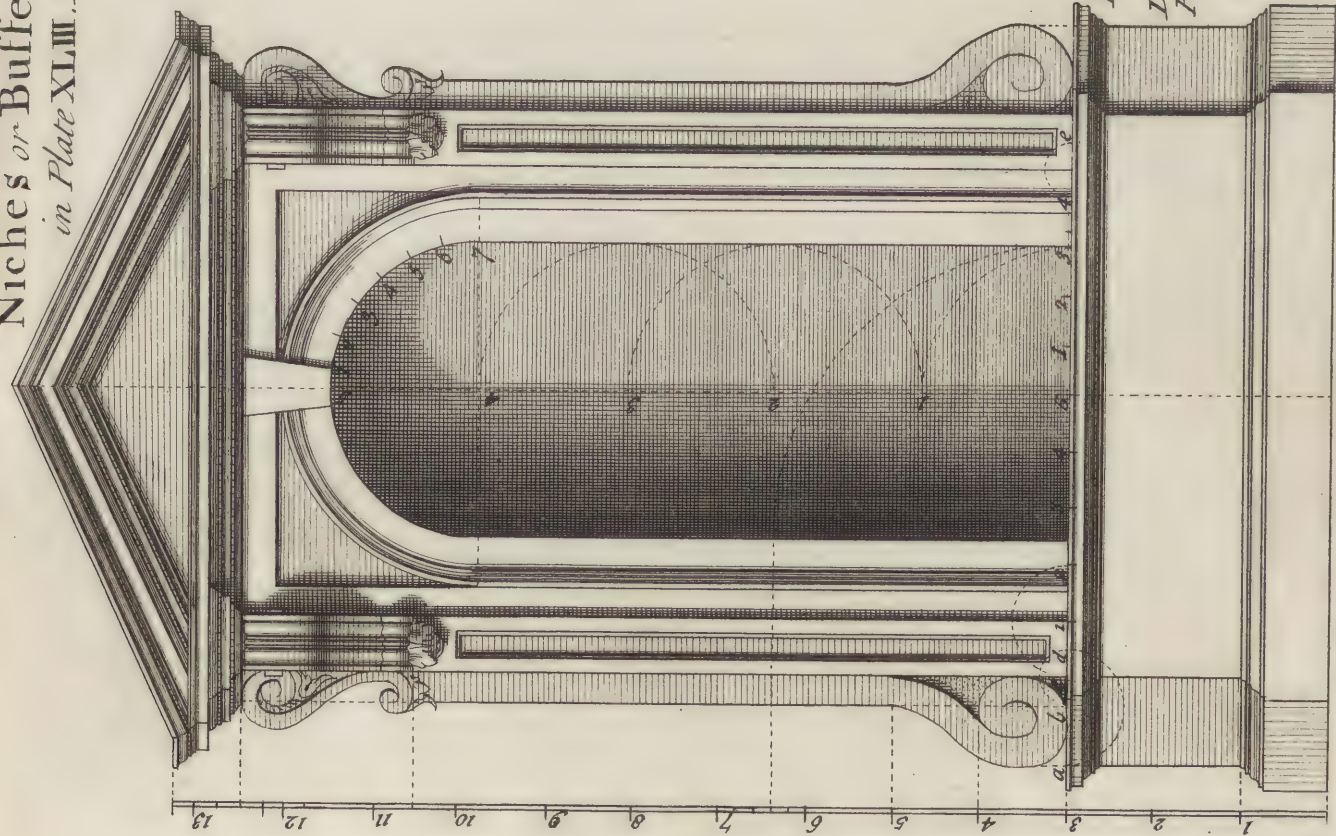
5 Diam.  $\frac{5}{6}$

Tho. Langley Sculp.

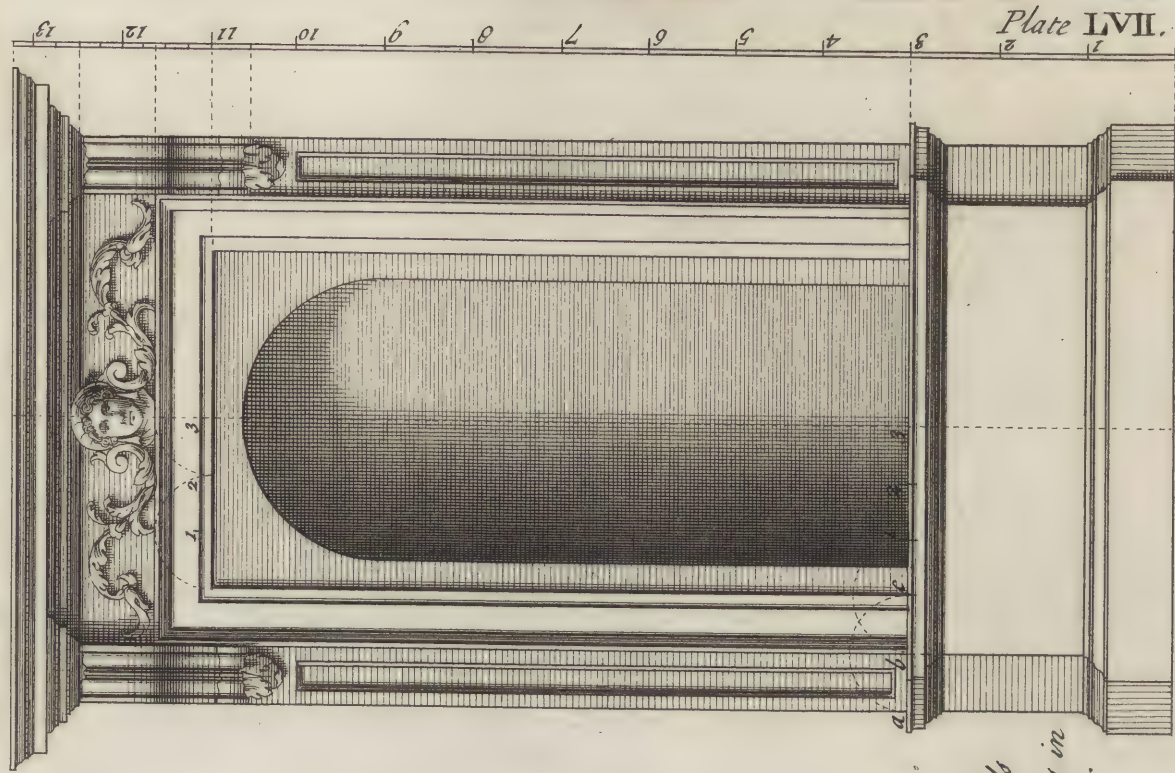




Niches or Buffetts whose Cornices are described at large  
in Plate XLIII. Fig. B. and Trusses in Plate XXXVIII.



Batty Langley Invent and Delin. 1739.



These  
Pedestals  
are  
Doric as in  
Plate III.

Tho: Langley Sculp.

Plate LVII.





The various Methods for forming the Heads of Circular & Elliptical Niches & Buffets. Plate LVIII.

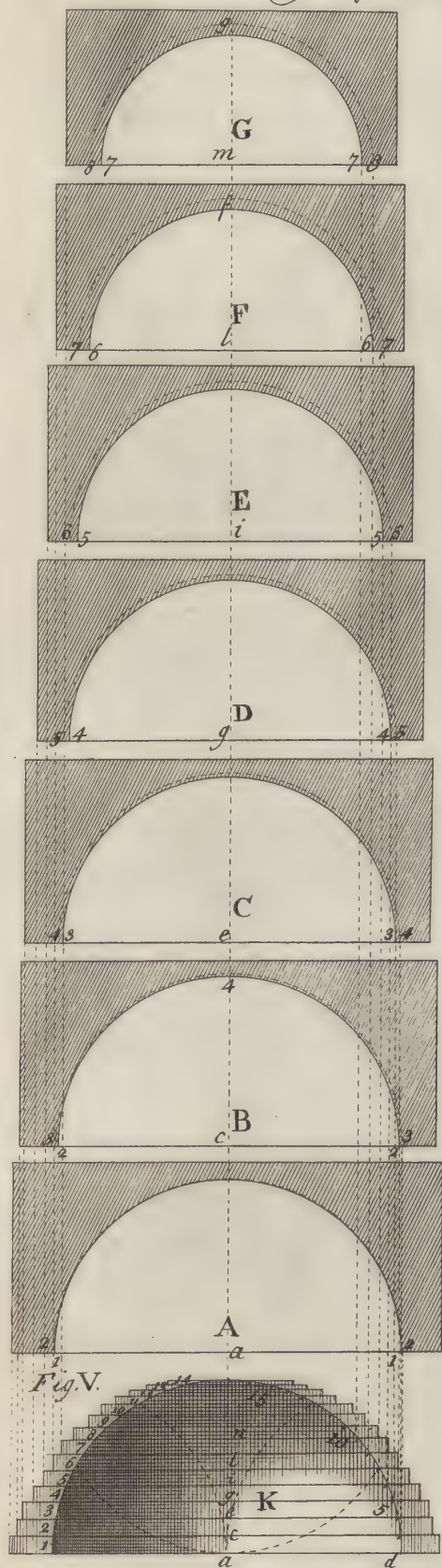


Fig.V.

Batty Langley Invent and Delin. 1739.

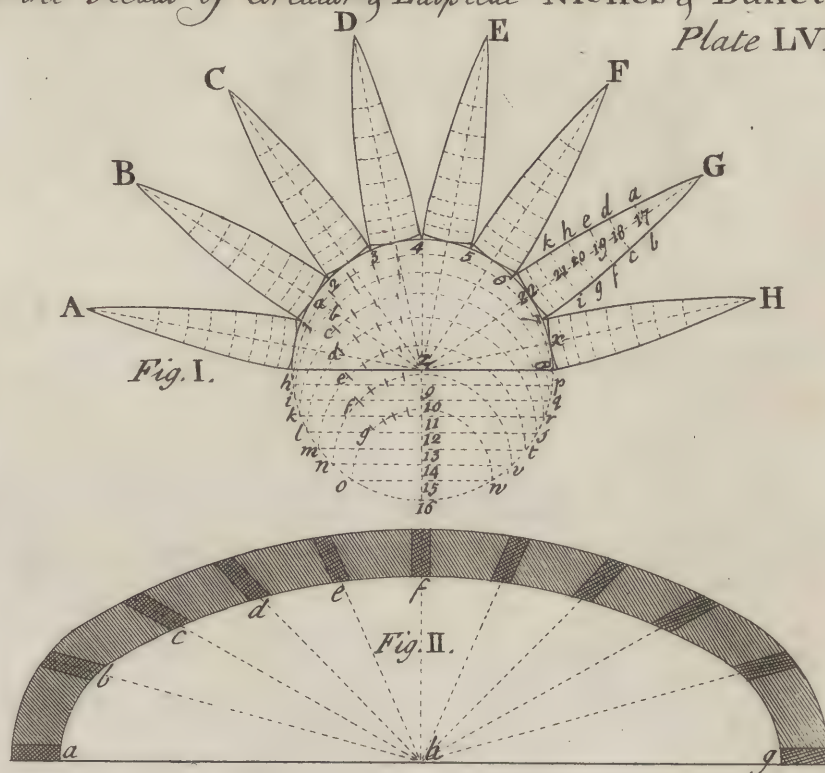


Fig. I.

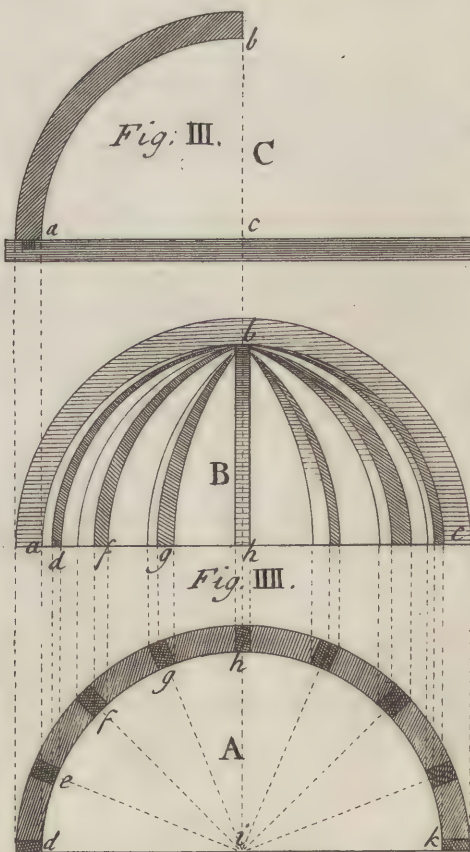
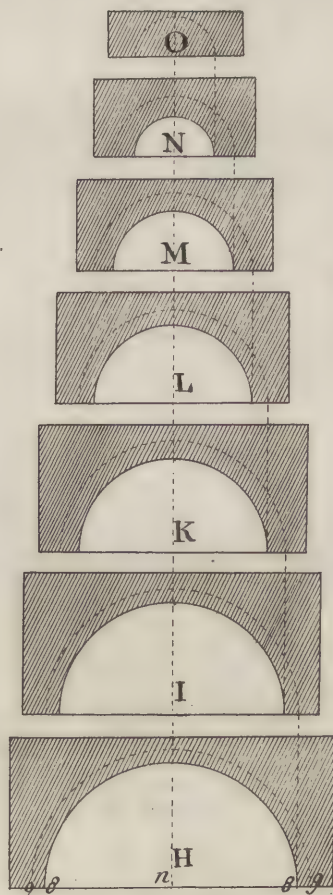


Fig. III.

Fig. IV.

Tho: Langley Sculp.







# Cisterns for Buffets.

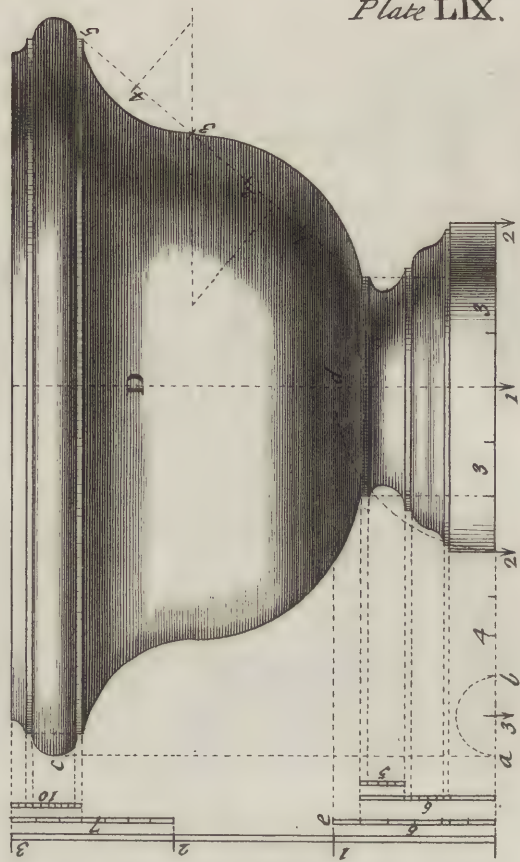
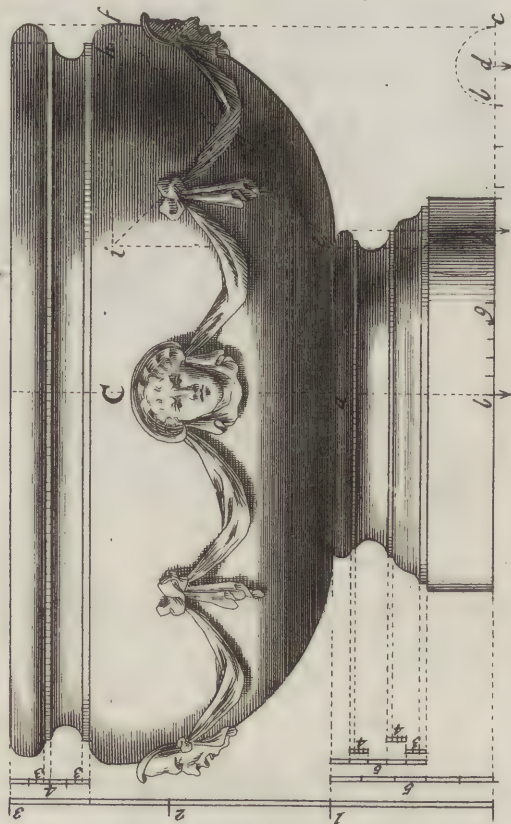
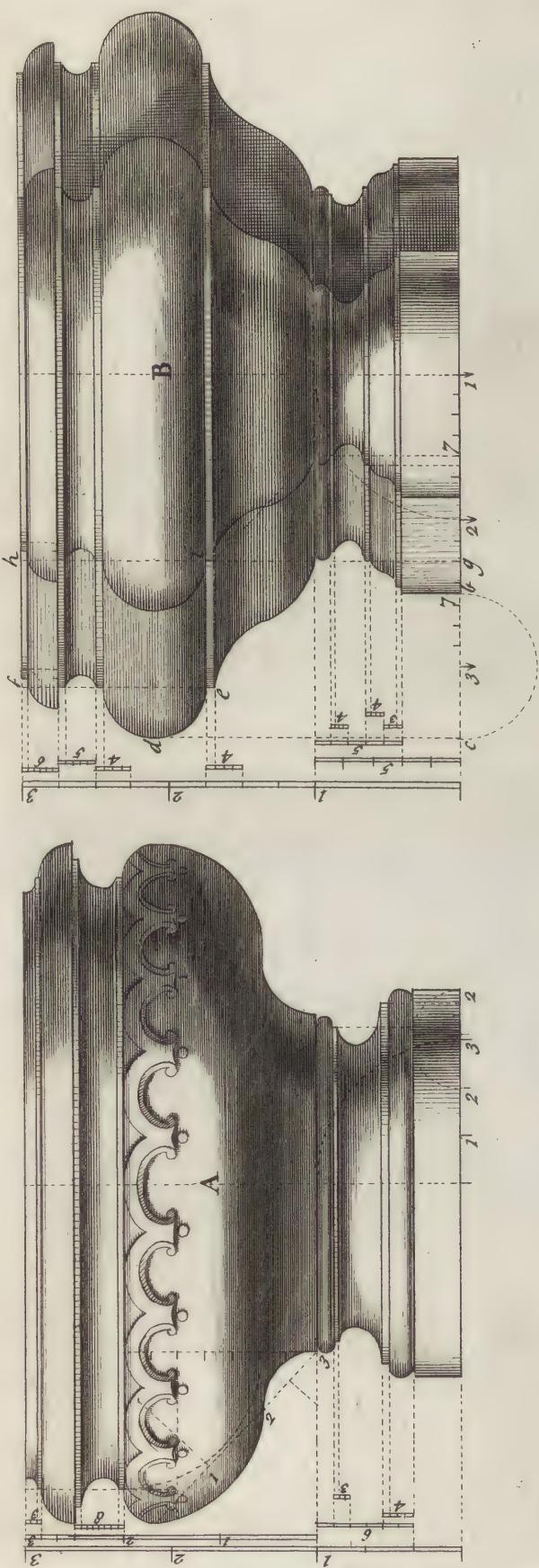


Plate LIX.

Thos. Langley Sculp.

Batty Langley Invent and Delin. 1739.





# Cisterns for Buffets.

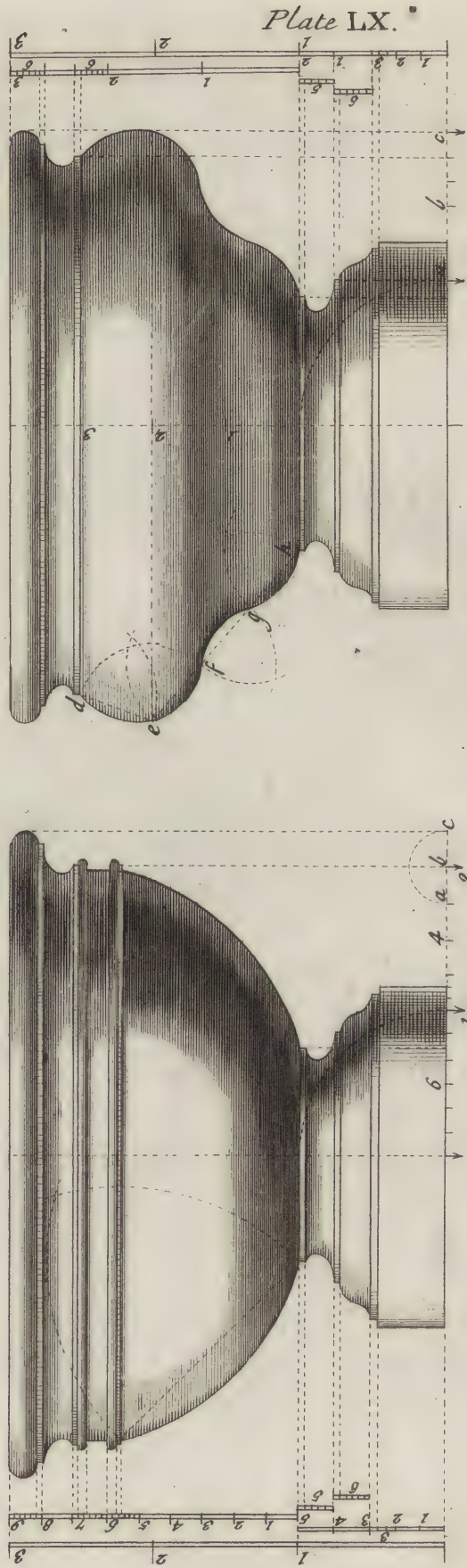
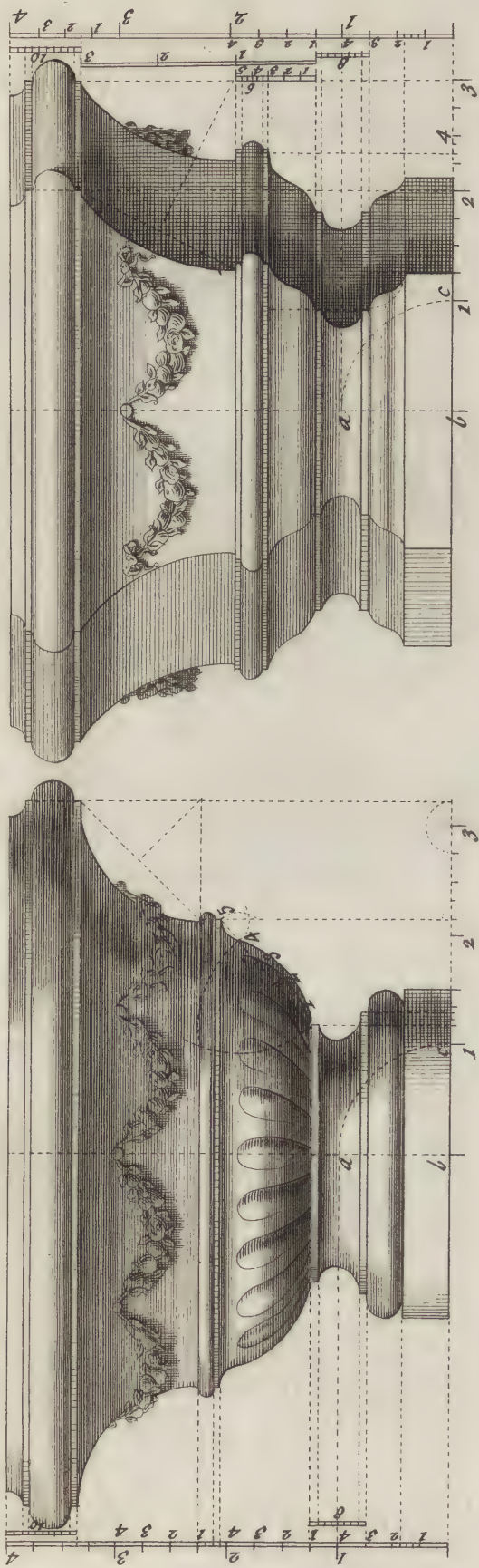


Plate LX.

Tho. Langley Sculp.

Batty Langley Invent and Delin. 1739.





*Chimney Pieces*

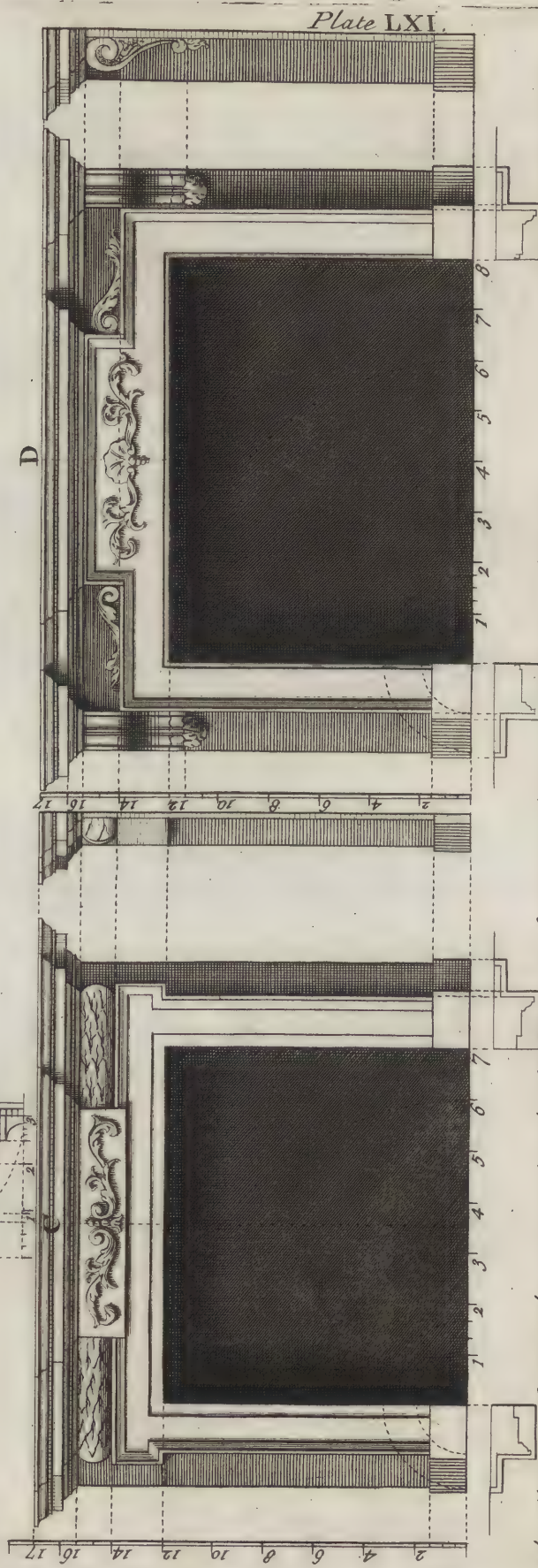
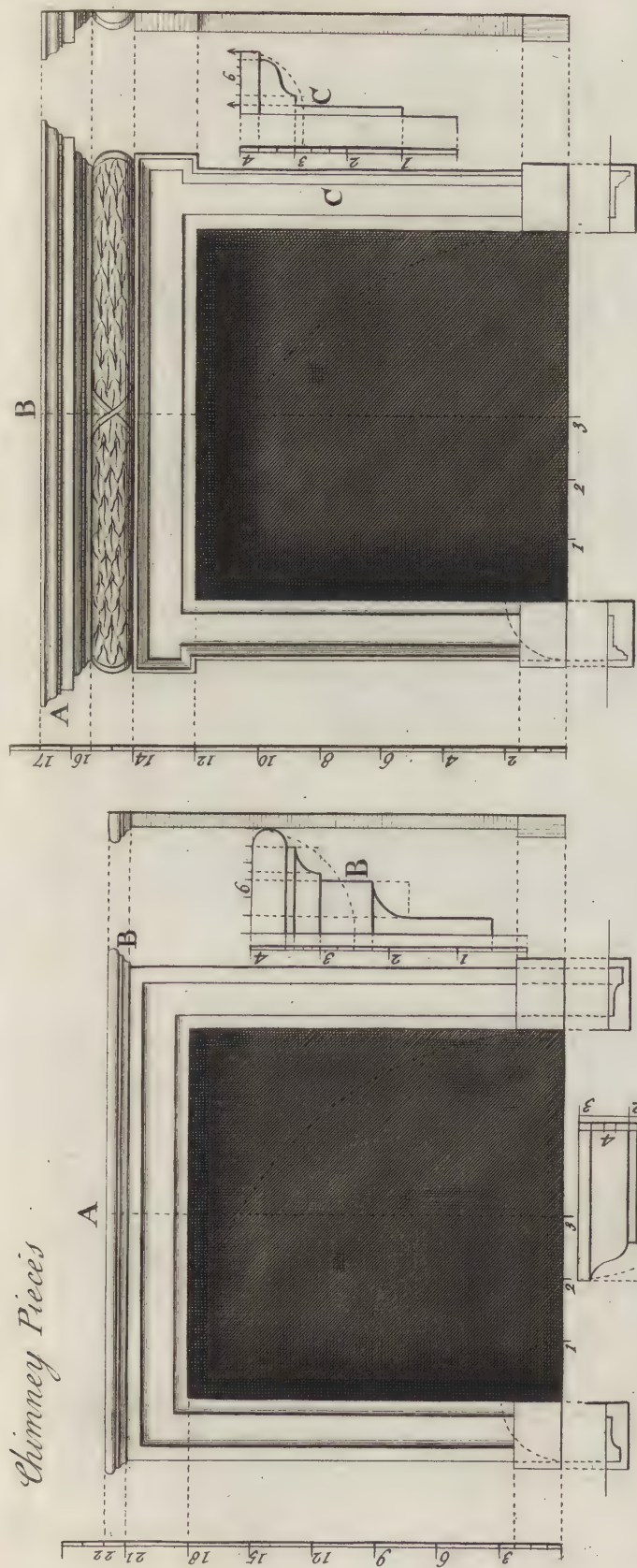
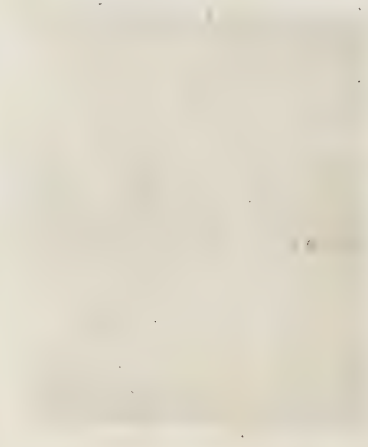


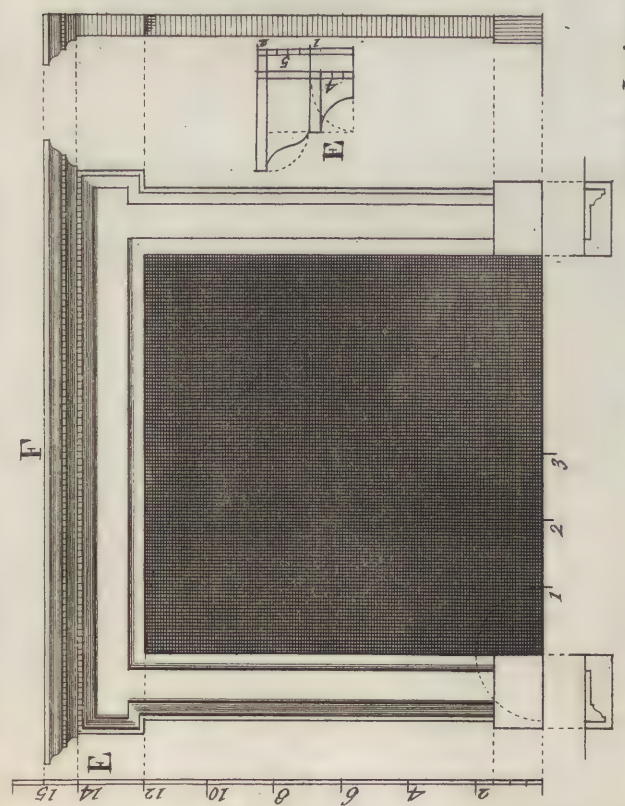
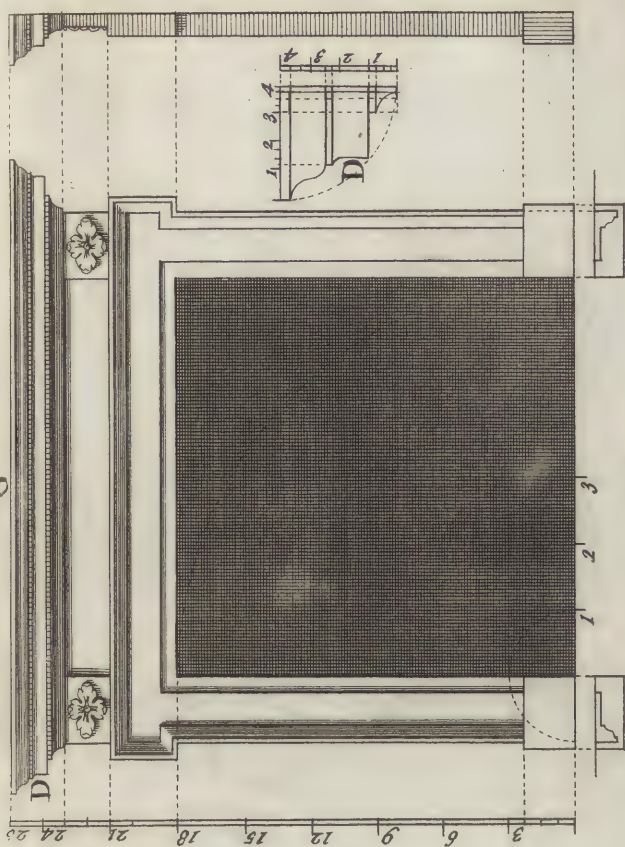
Plate LXI.

*Tho. Langley Sculp.*

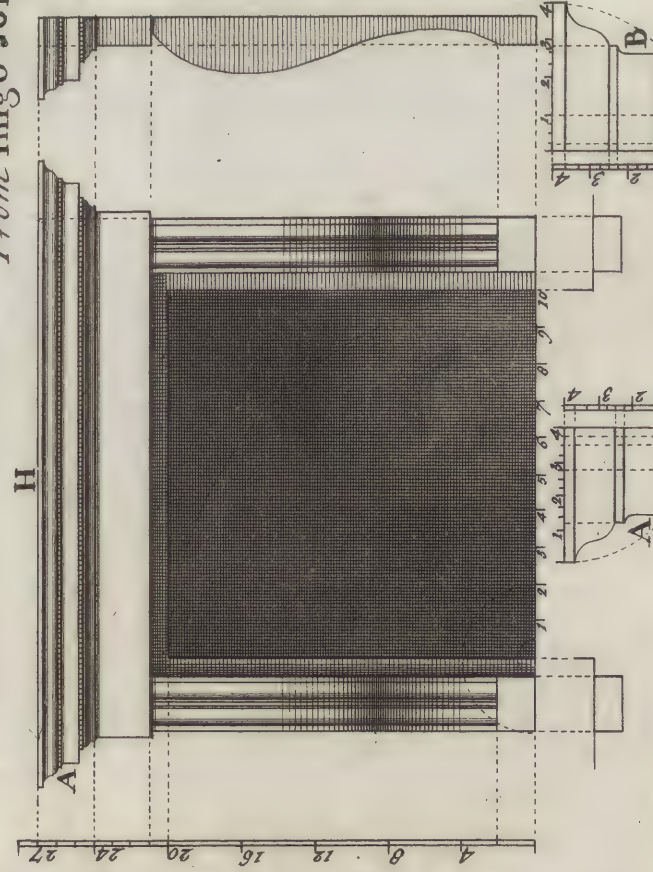
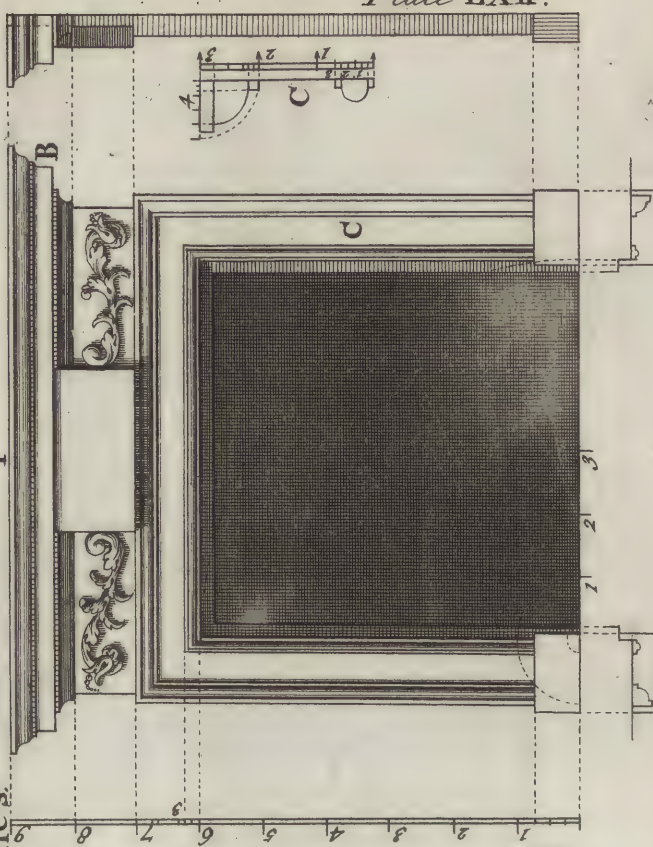
*The Measures Invented & proportioned, with Plans & Sections added. By Batty Langley 1739.*







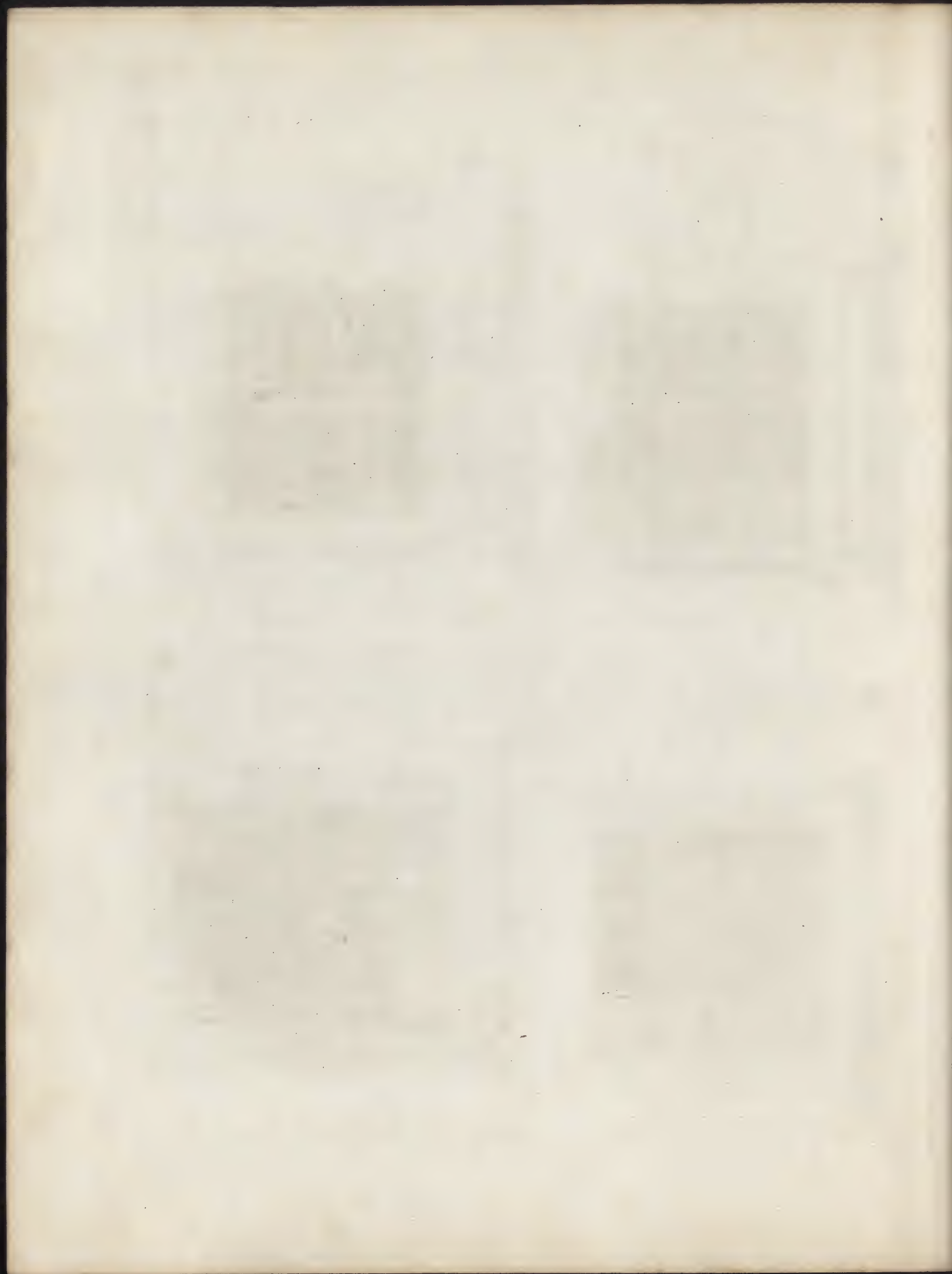
From Inigo Jones.

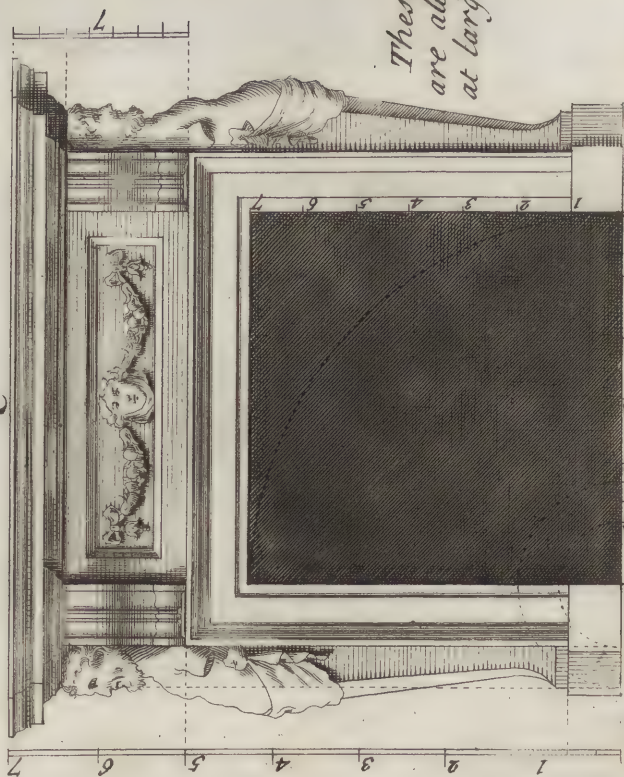
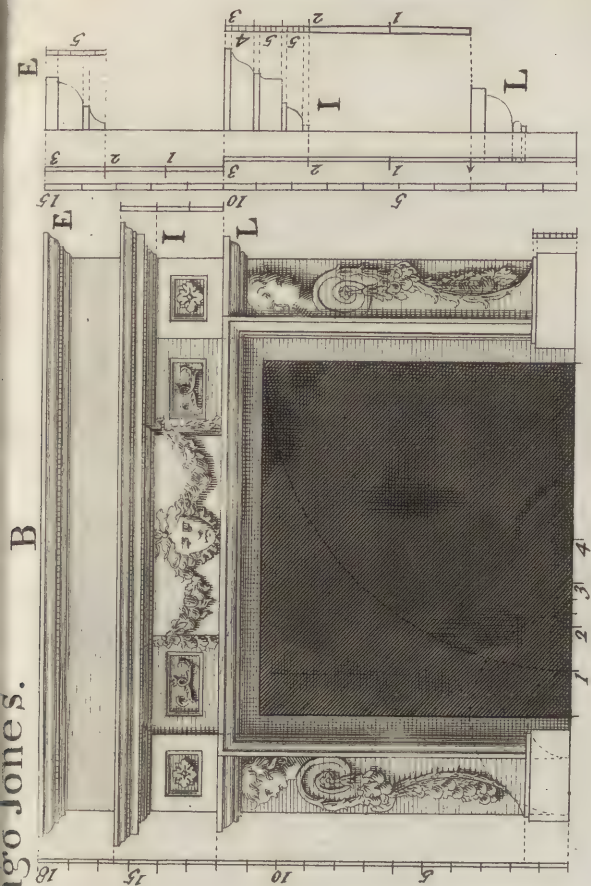
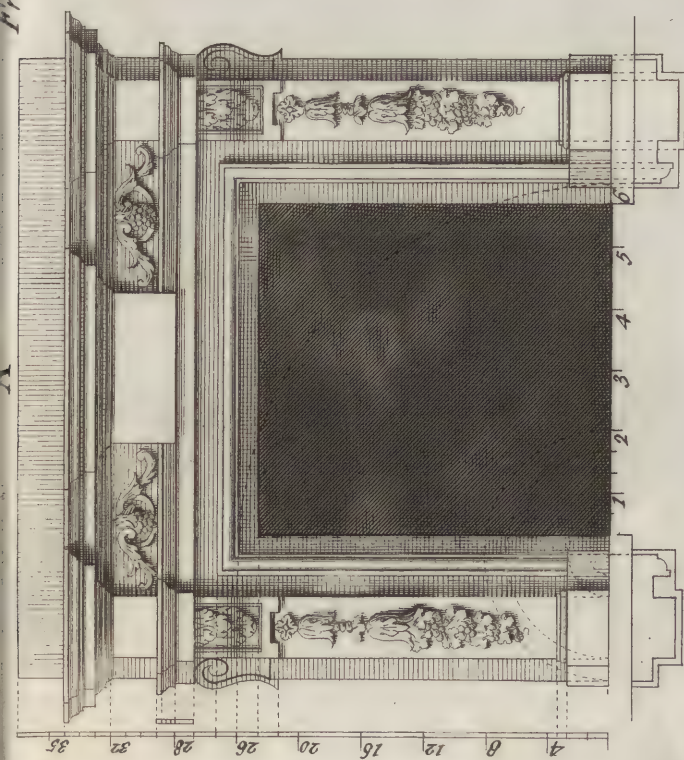


Theo. Langley Sculp.

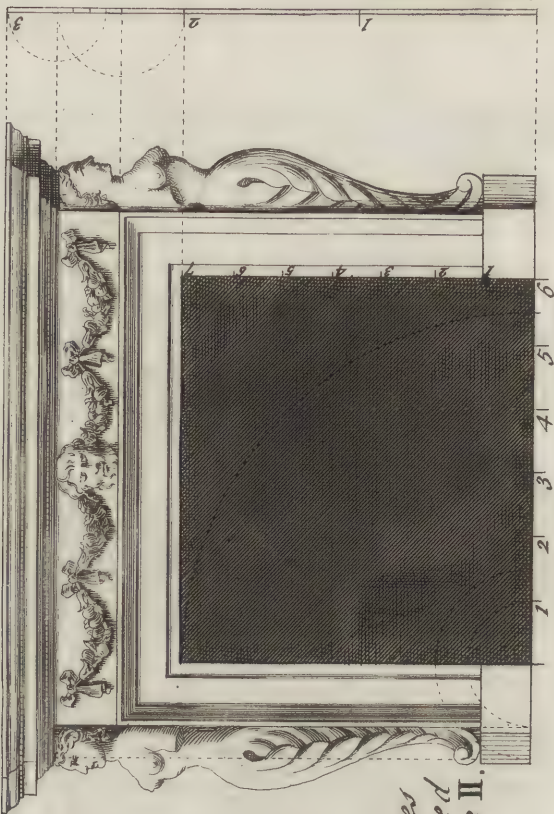
The Proportions and Measures Invented by Battie Langley 1739.







*These Cornices  
are all described  
at large in Plate II.*



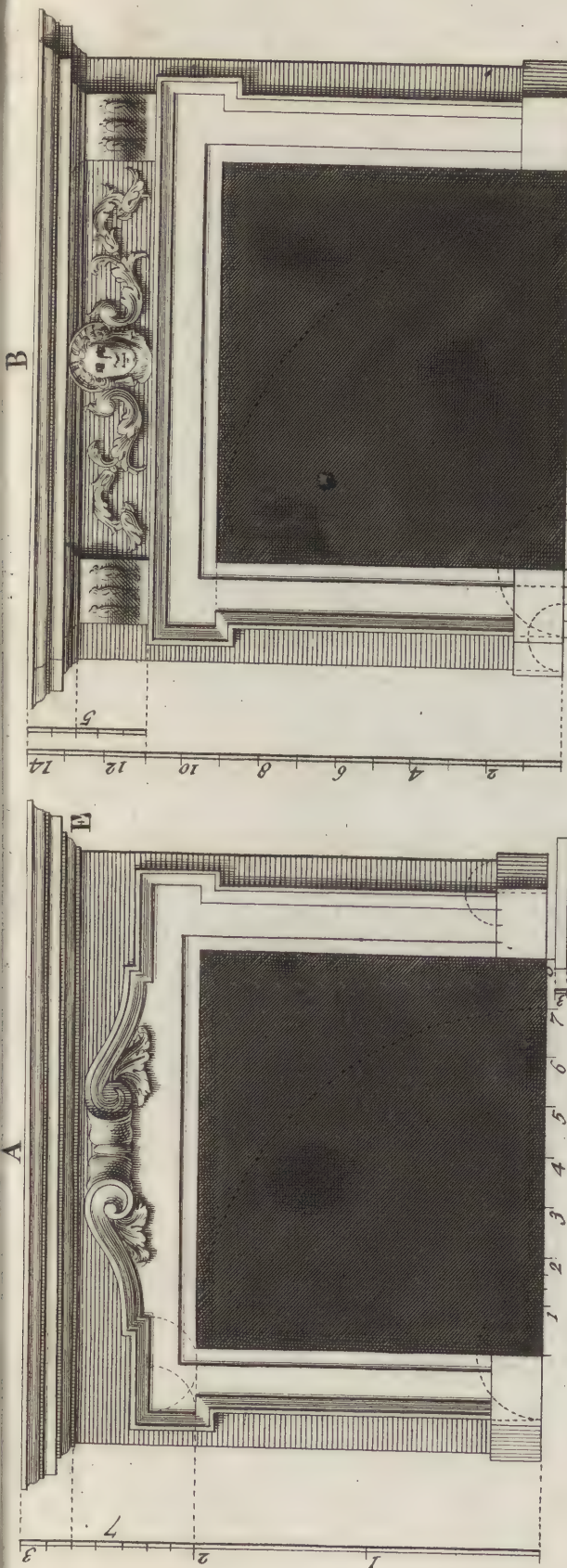
*The Measures Invented & aff'rd by Battj Langley 1739.*

*Tho. Langley Delin and Sculp.*

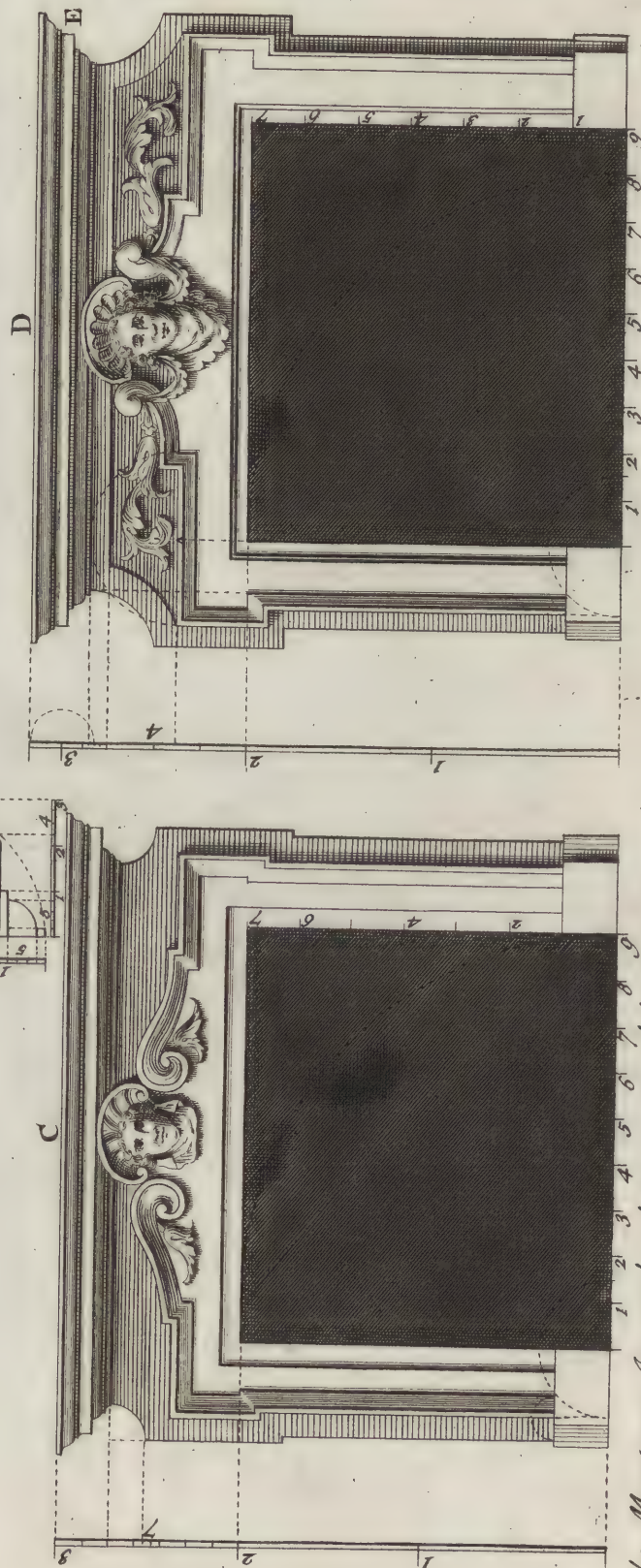








The Cornices to B and C are at large in Plate II.

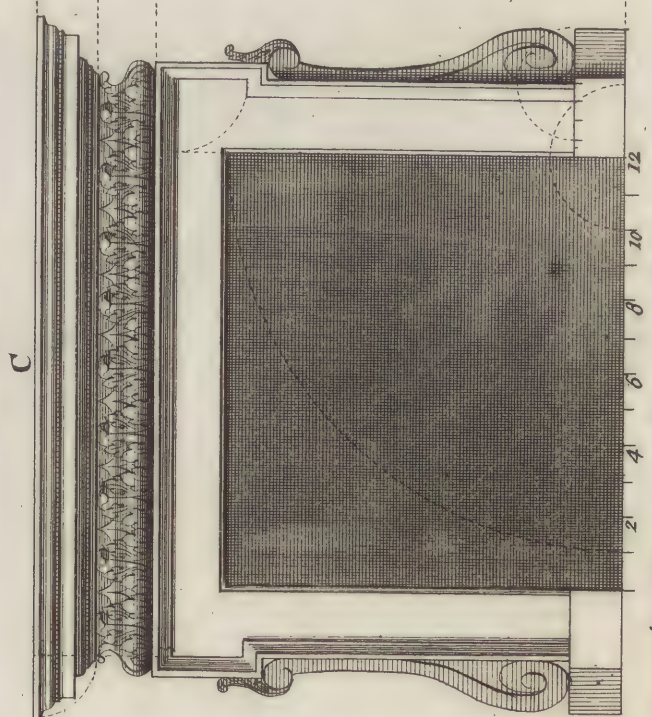
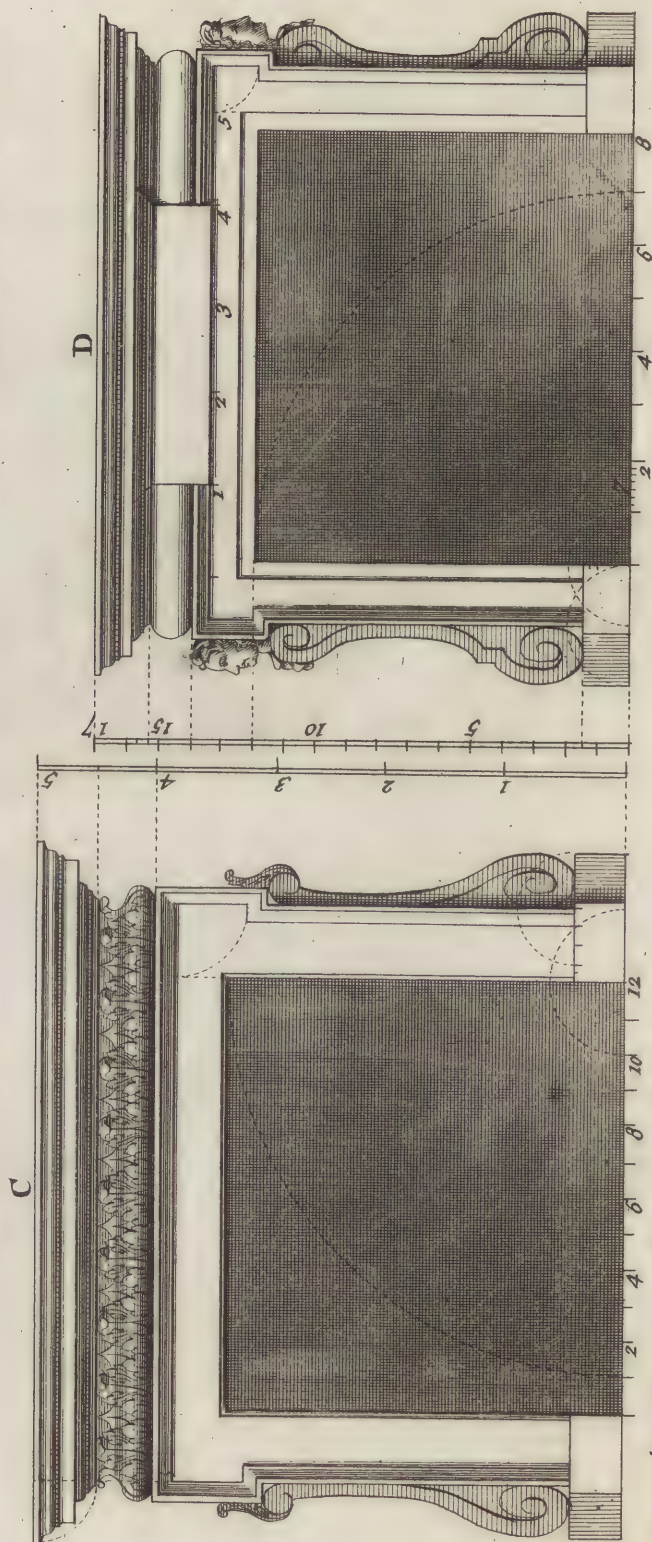
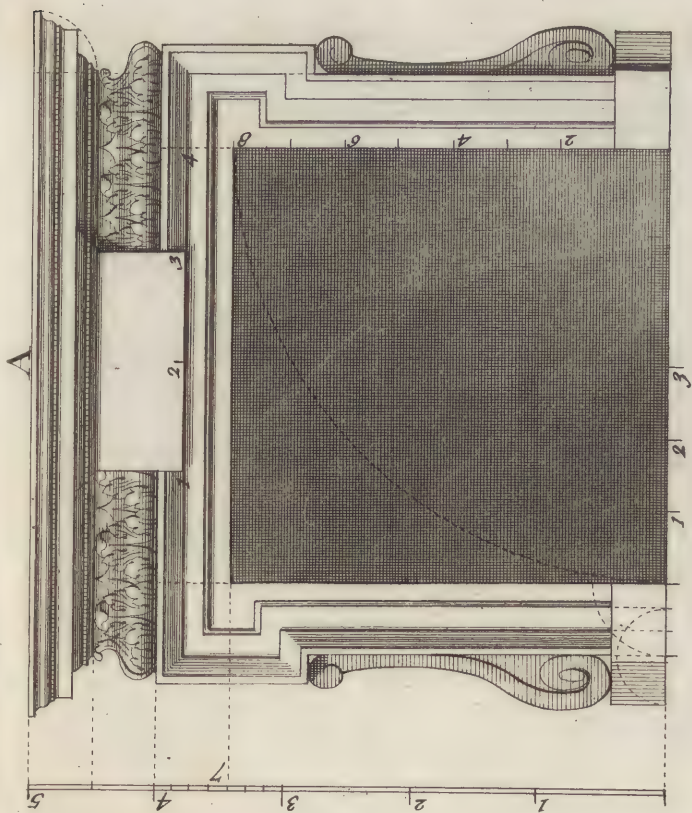
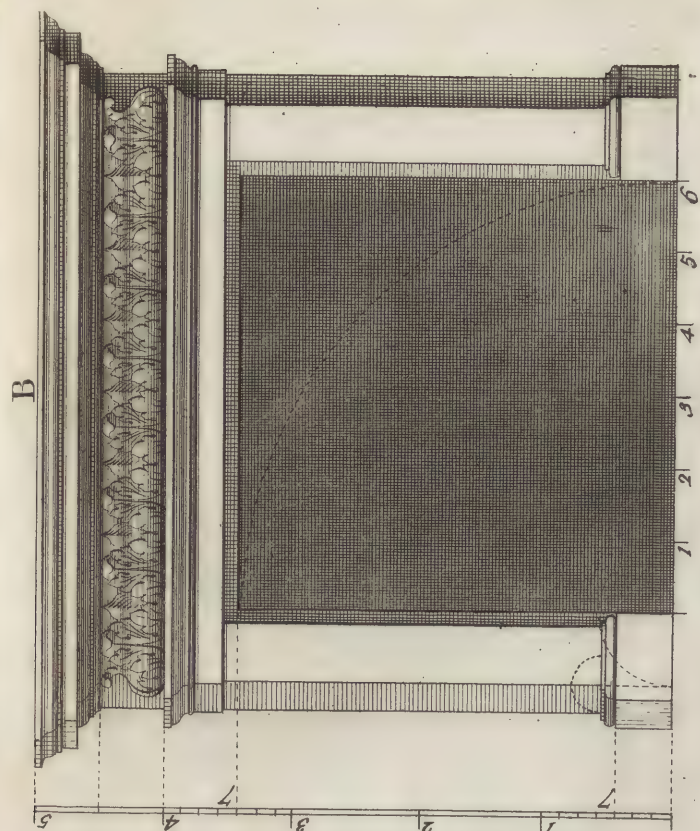


The Measures Invented and Proportioned by Batty Langley 1739.







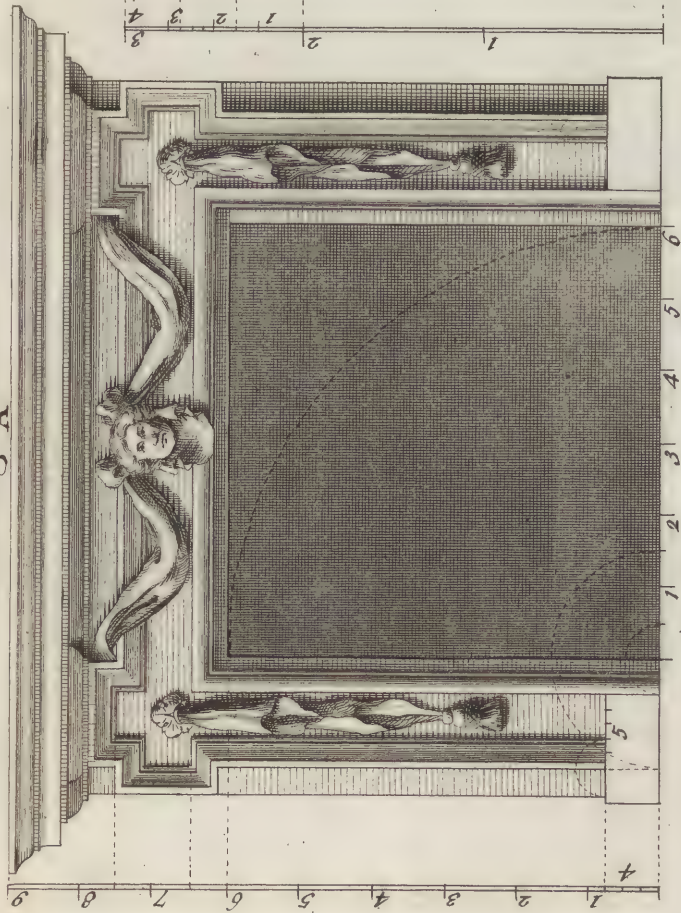




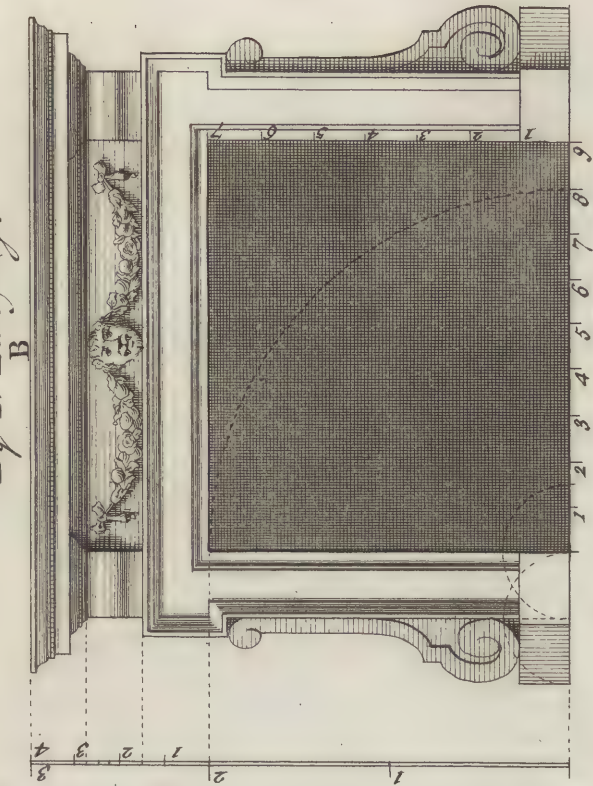




From Inigo Jones.

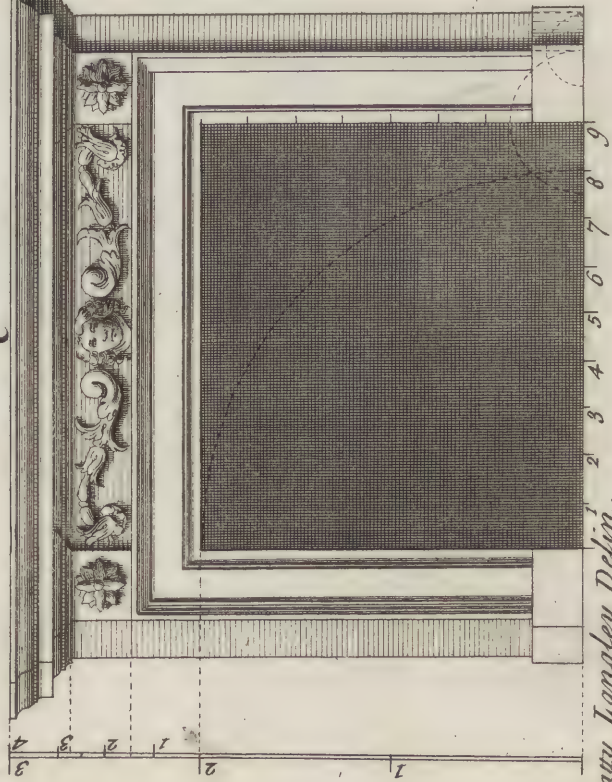


By T. Langley.



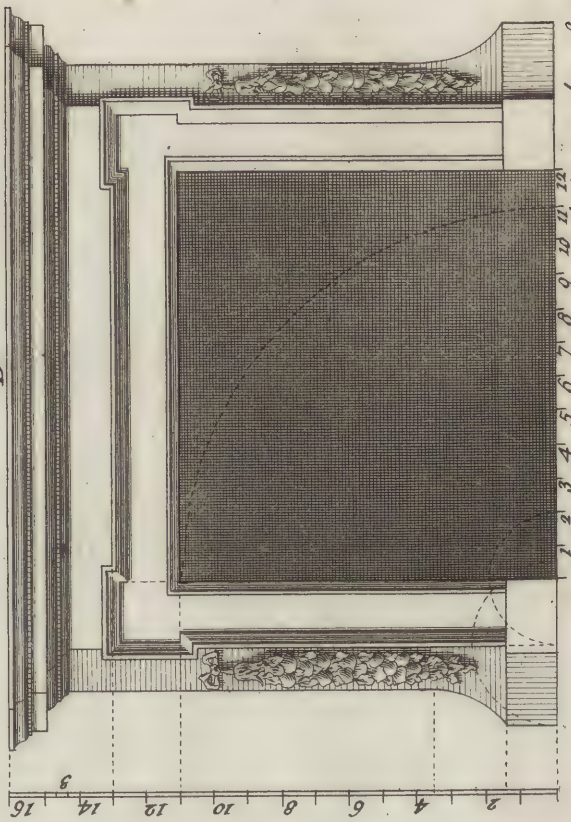
C

By T. Langley.



Barry Langley Delin.

D



Tho. Langley Sculp.

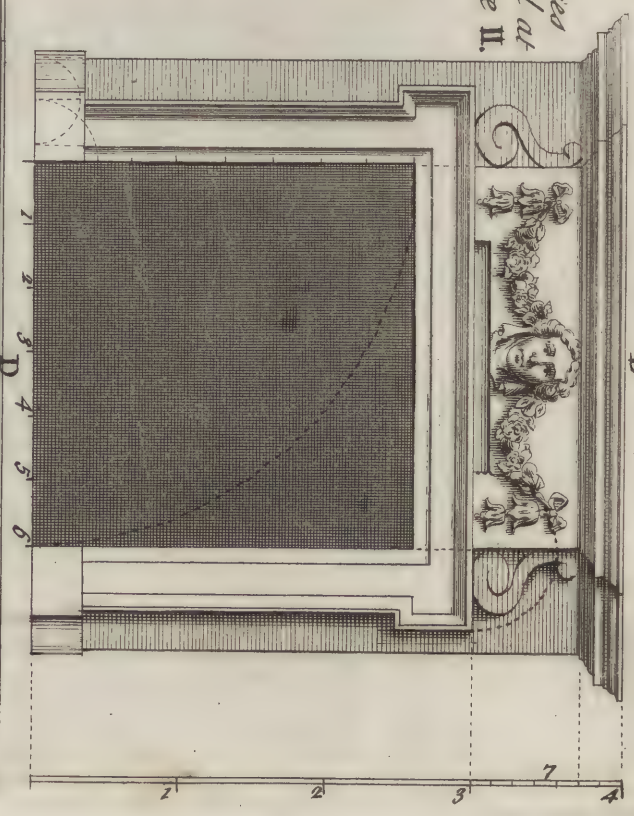
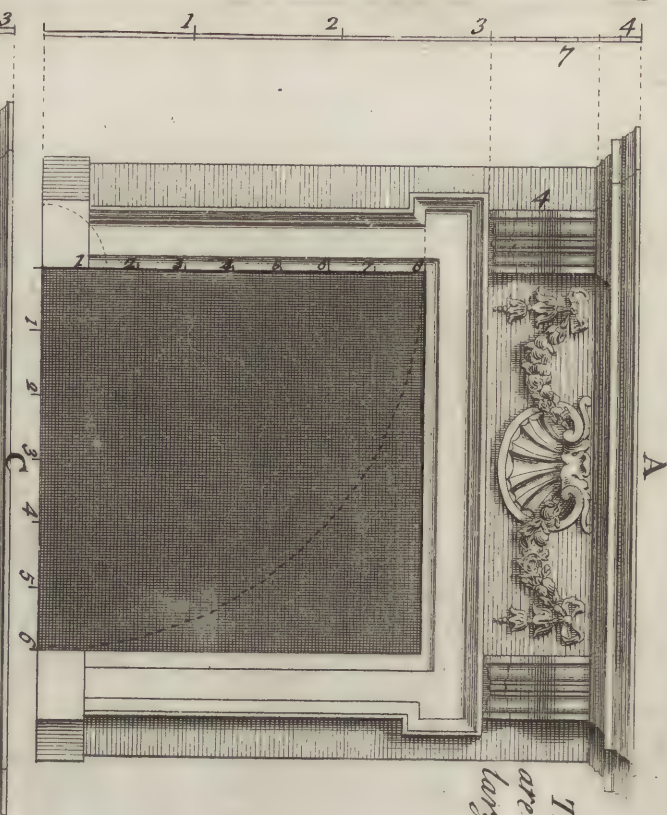




The Cornices  
are described at  
large in Plate II.

A

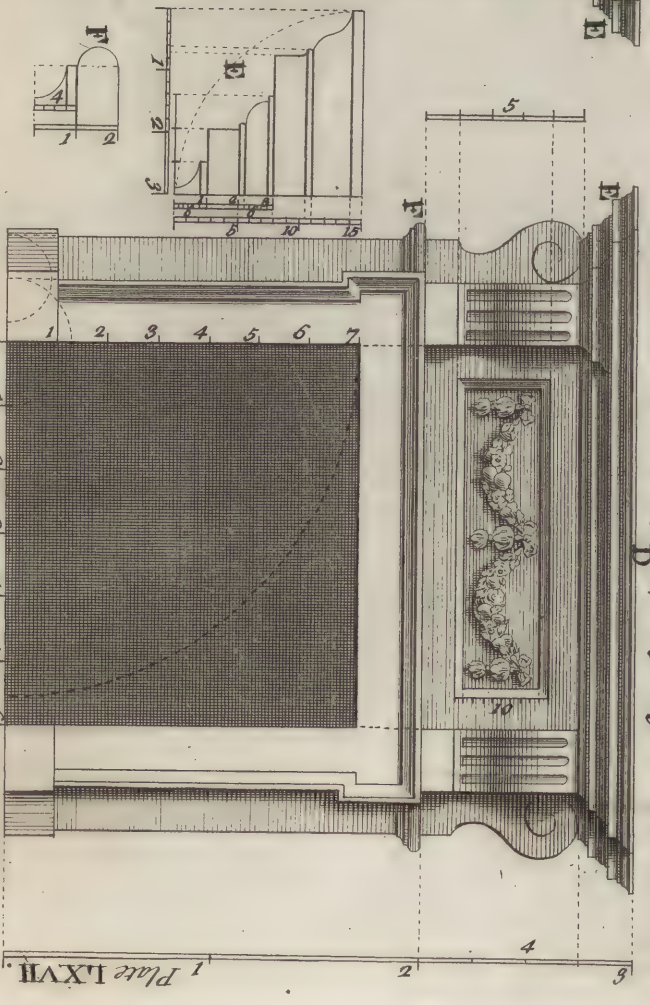
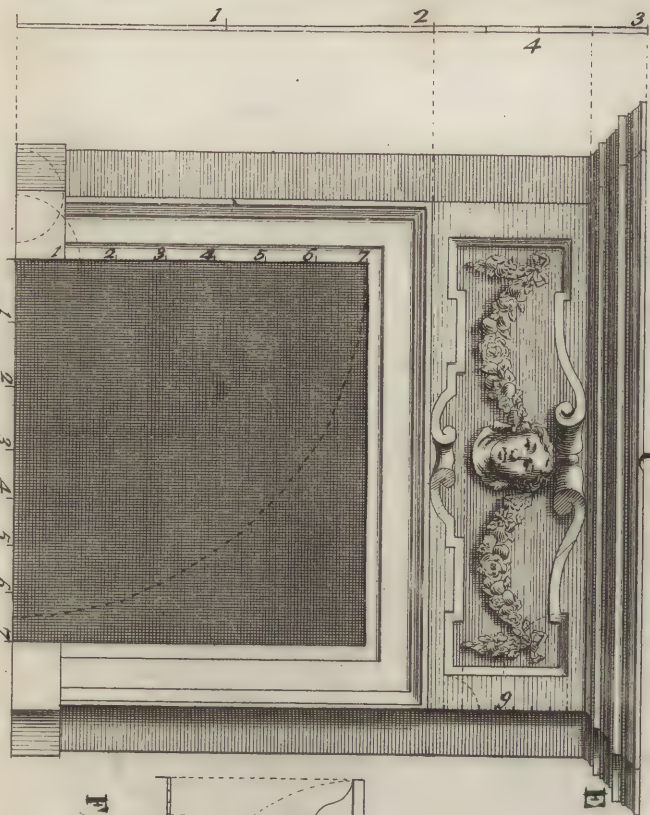
B



E

F

D



The Measures, Invented proportioned and affixed by Battie Langley 1739.

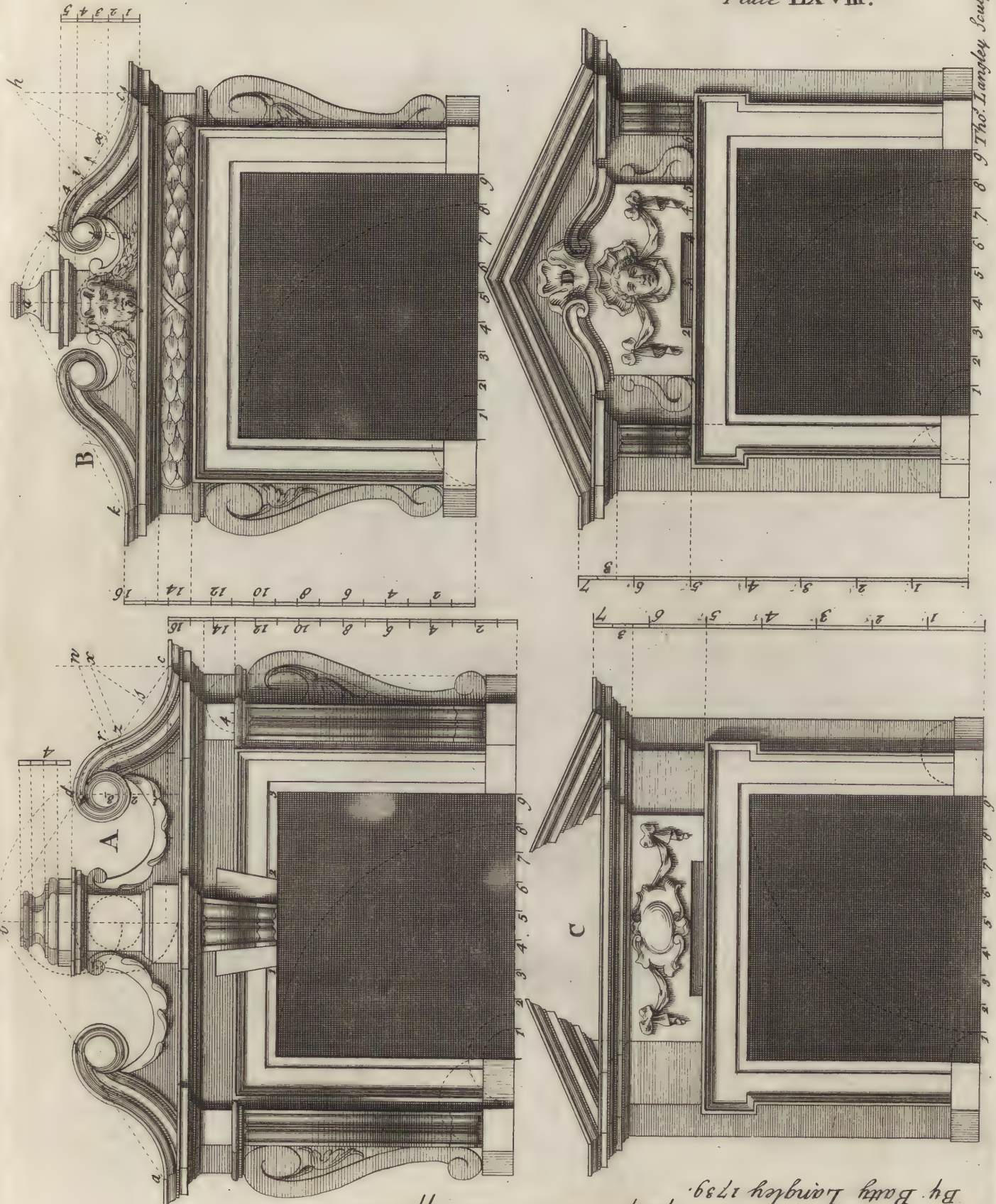
The Langley Sculp.







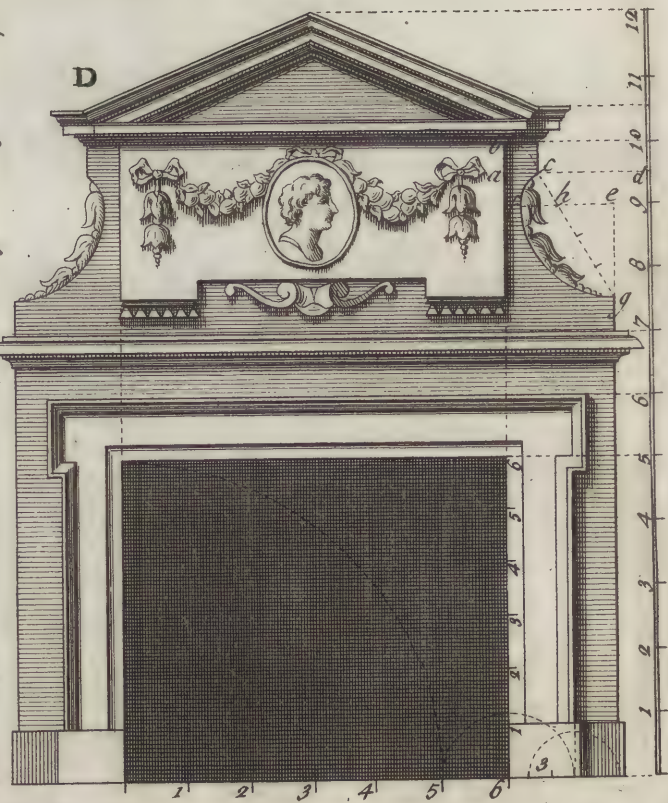
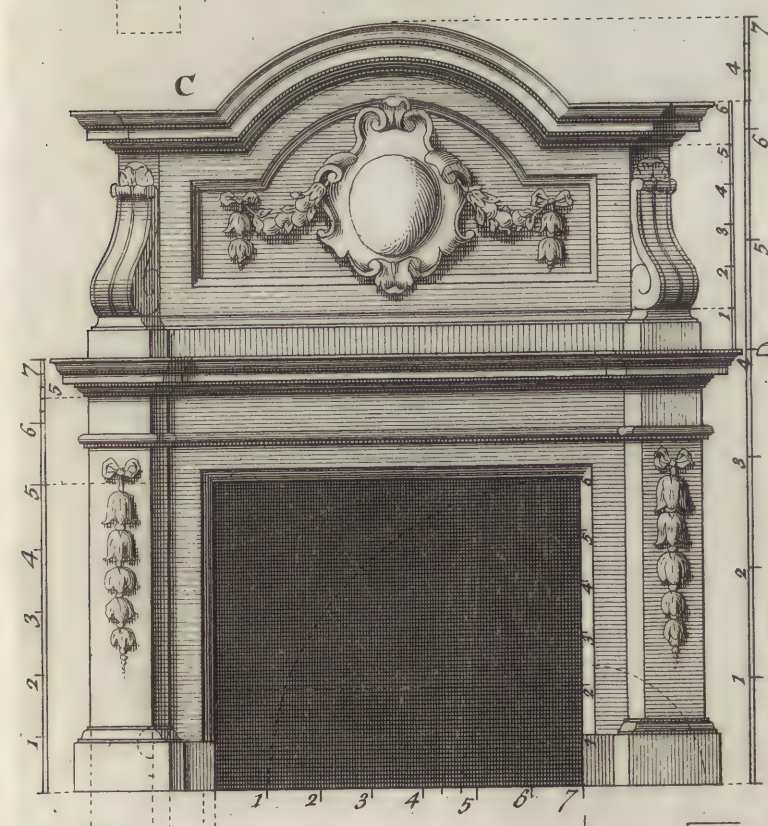
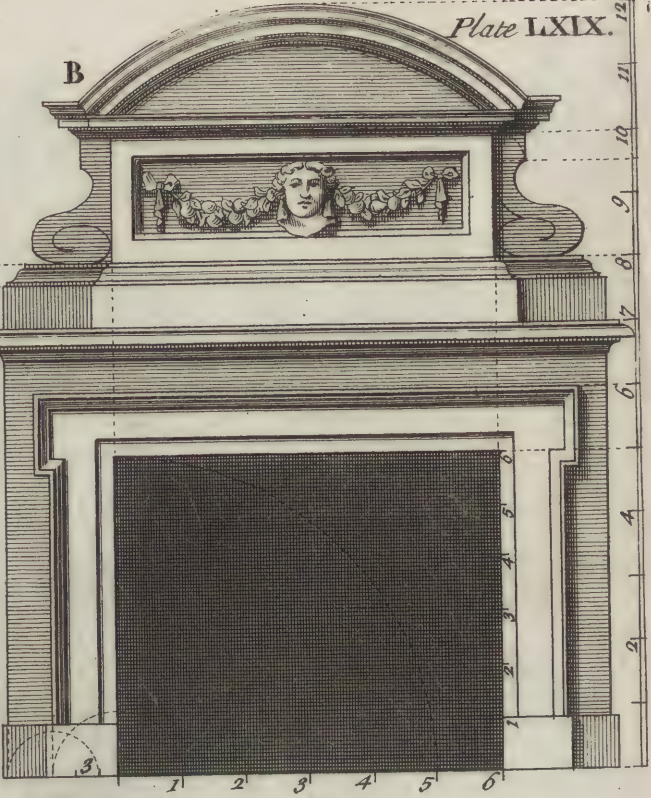
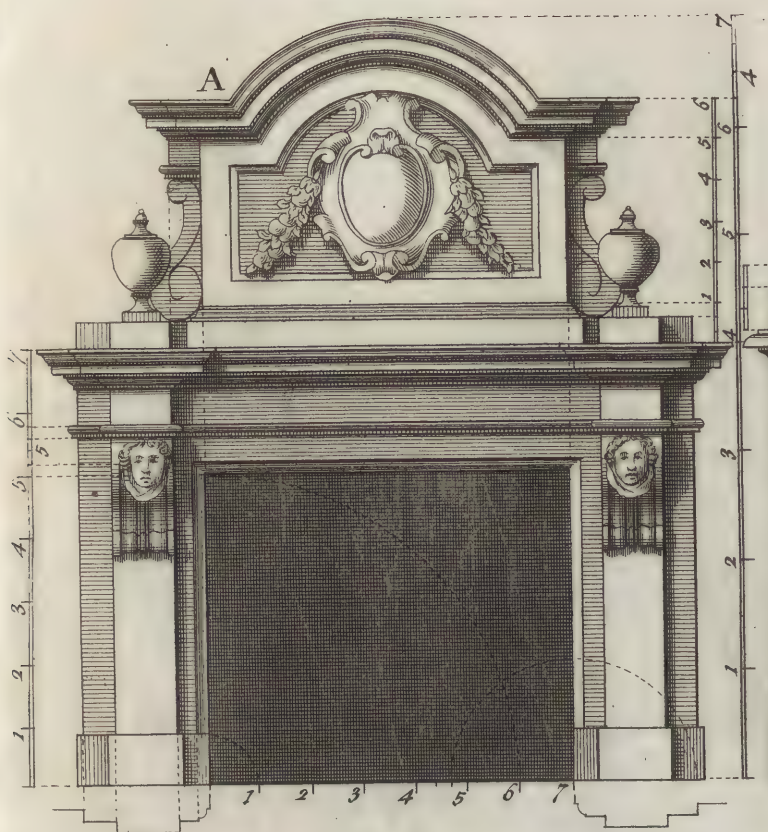
The Measures Given and proportioned and affixed  
By Batt: Langley 1739.











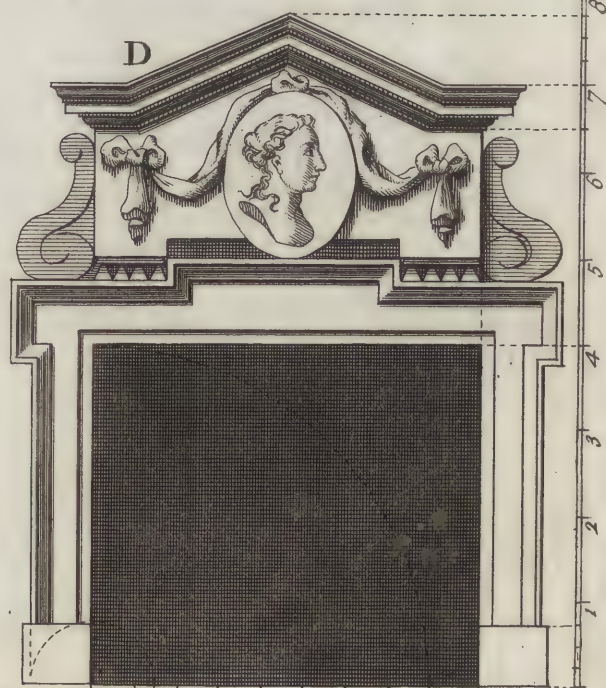
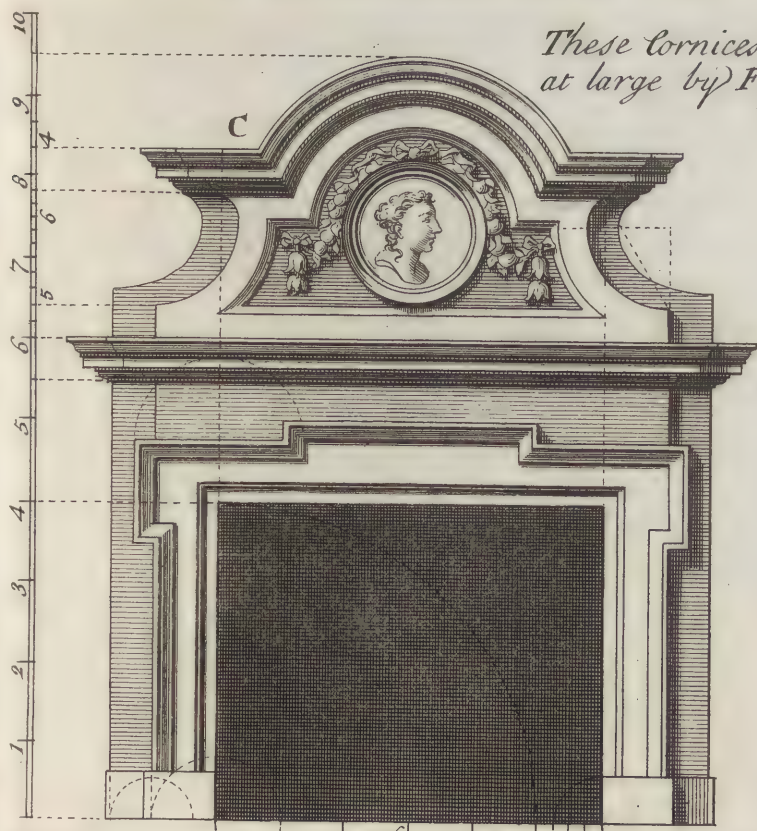
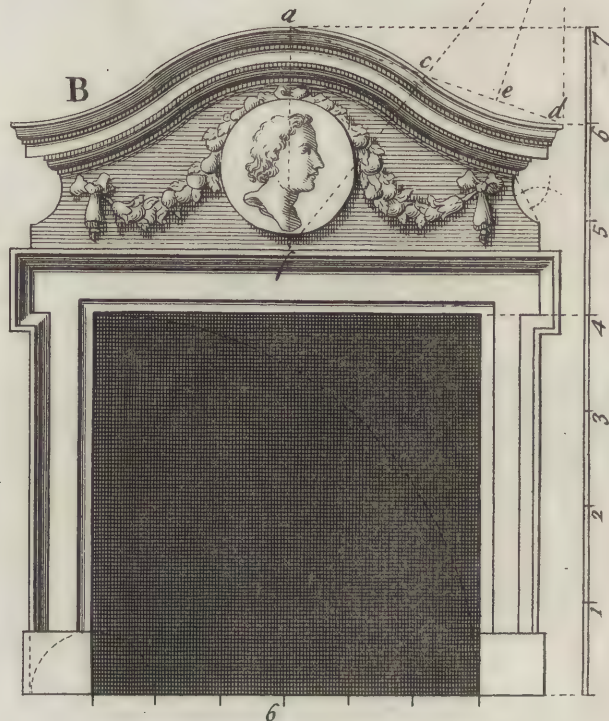
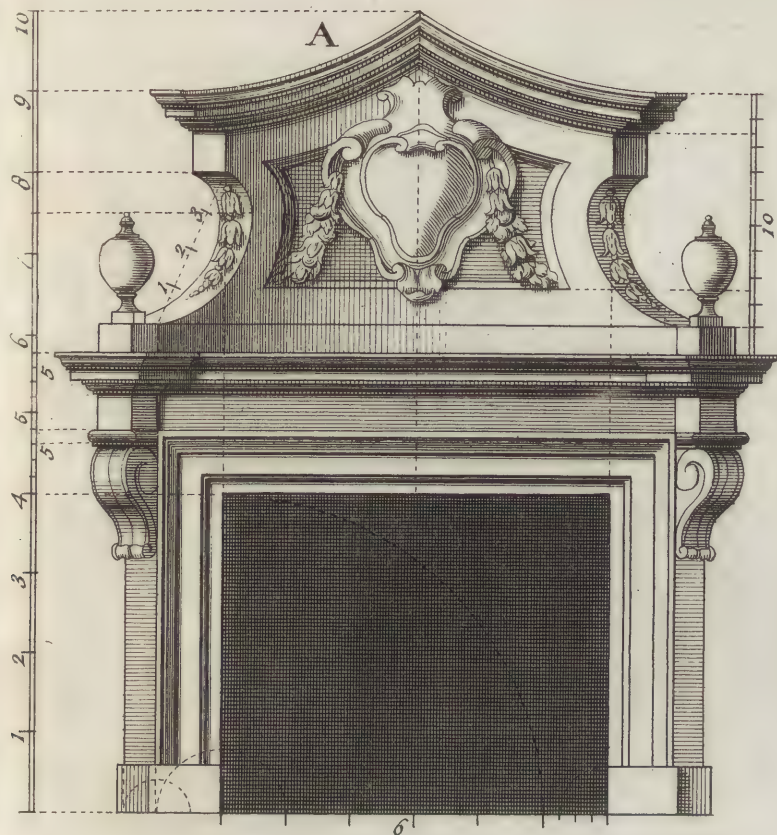
The Measures Invented proportioned and Affixed by Battie Langley 1739.

Tho<sup>s</sup> Langley Sculp.





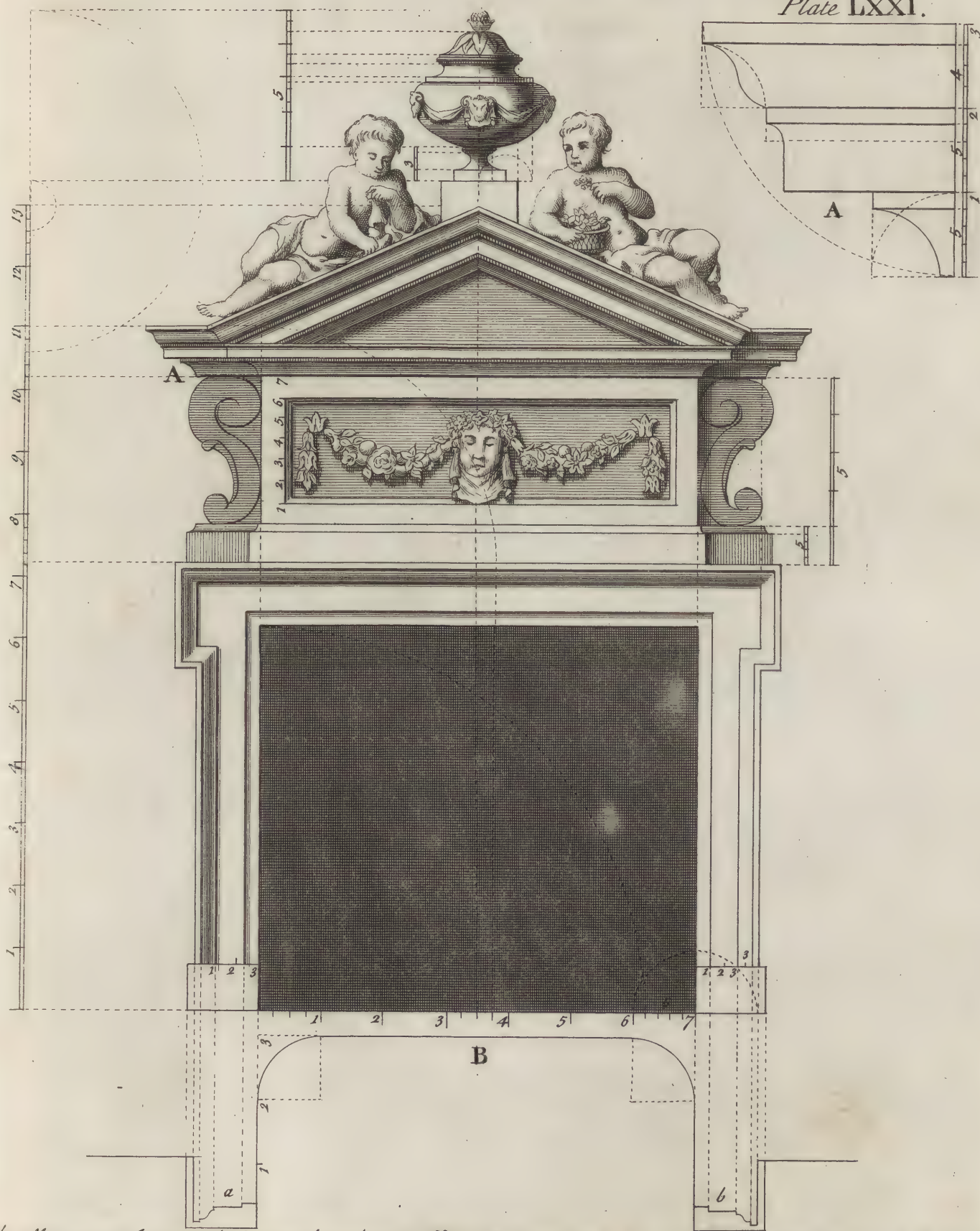




*These Cornices are Expressed  
at large by Fig. E Plate LXIV.*





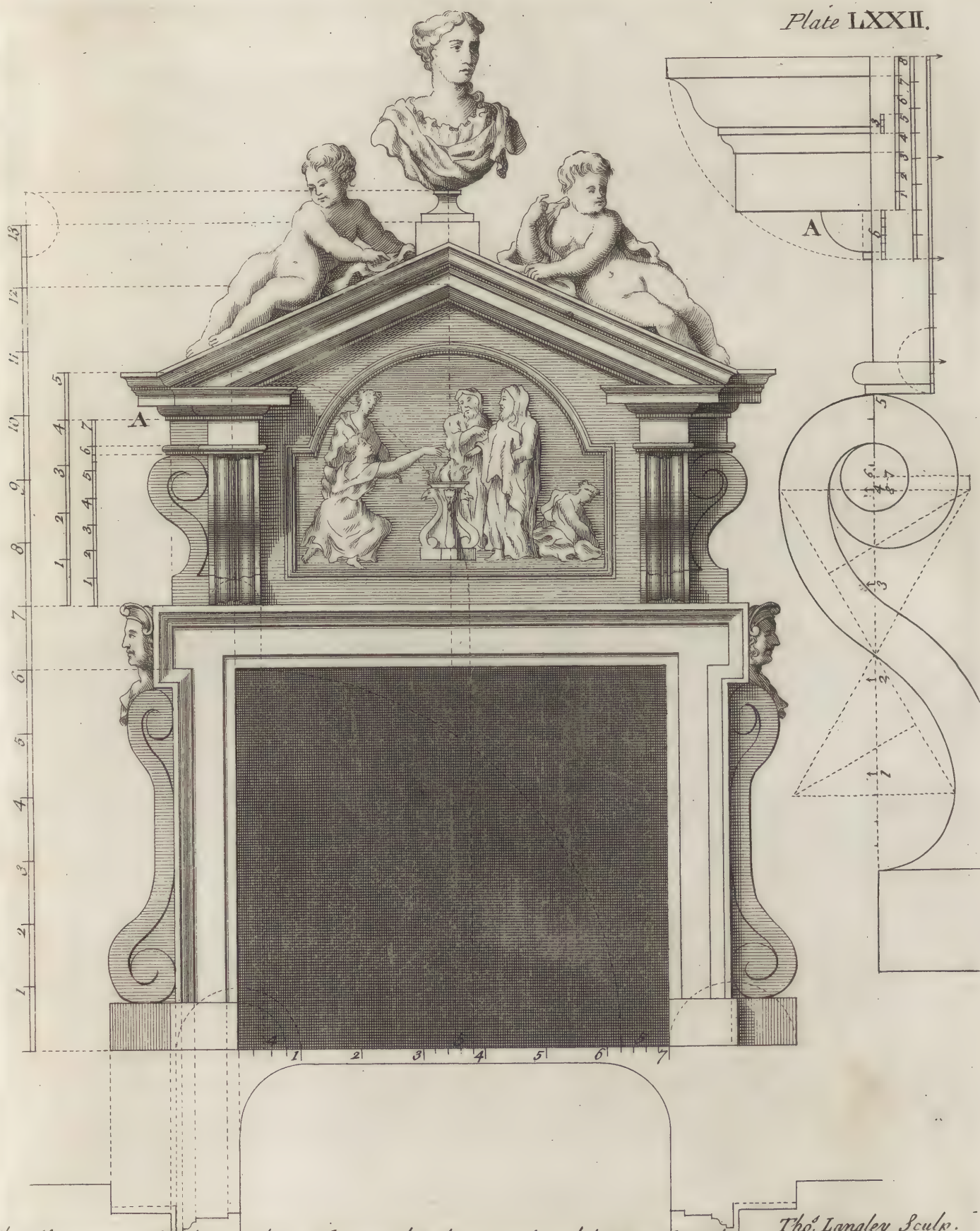


The Measures Invented, Proportioned and affixed by Batty Langley 1739.

Tho. Langley Sculp.

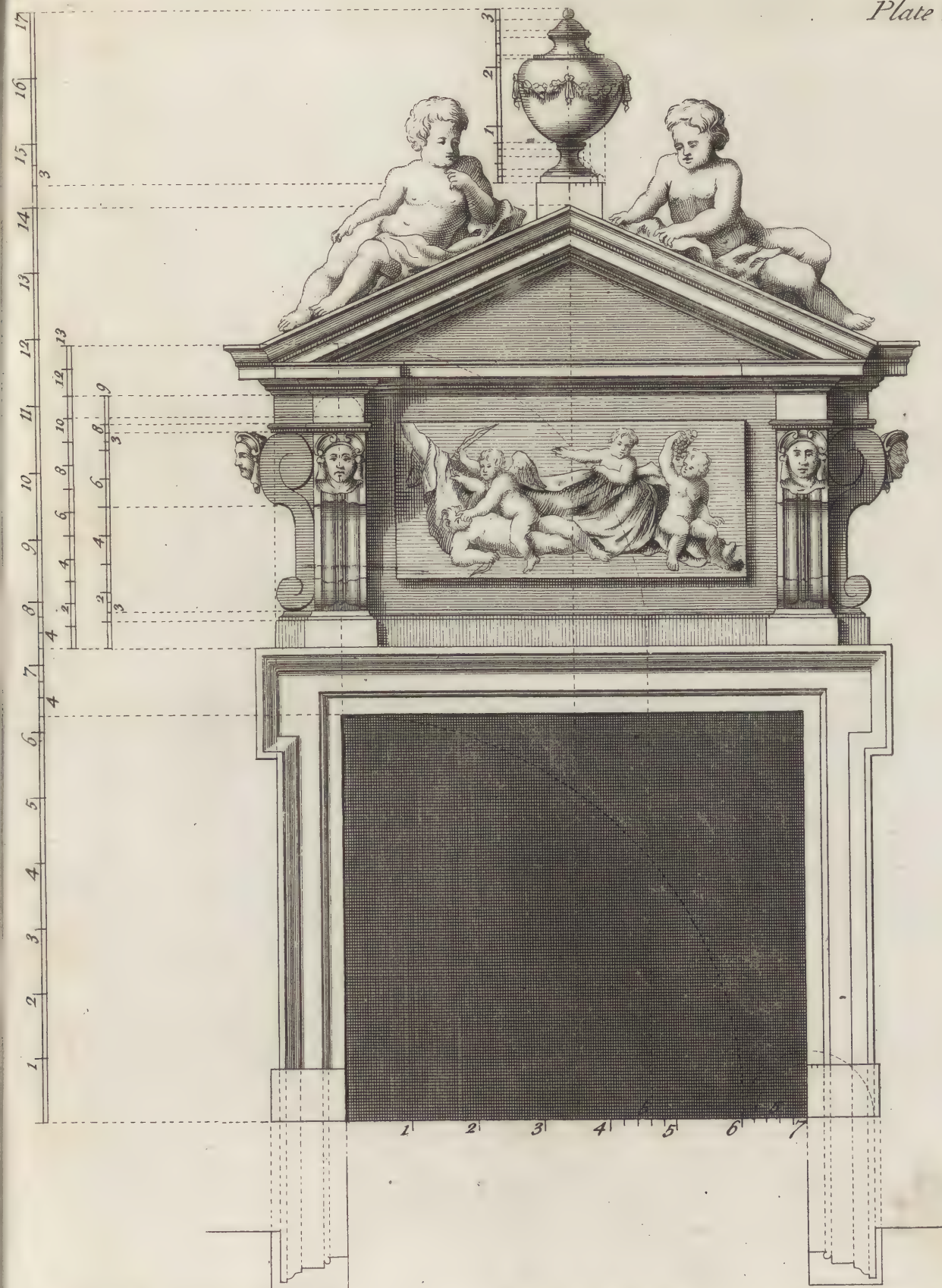












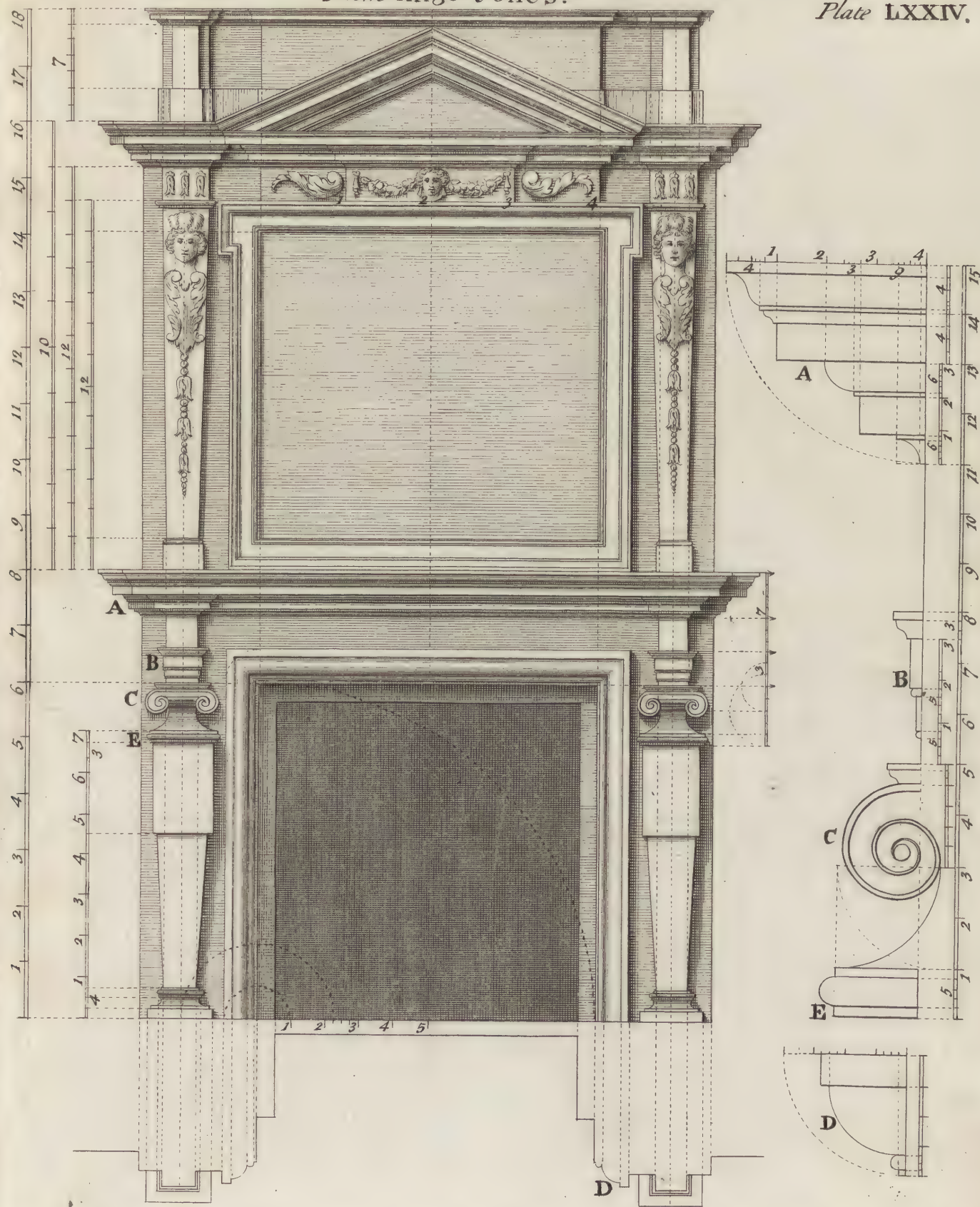
The Measures Invented proportioned and Affixed by Batty Langley 1739. Tho<sup>d</sup>. Langley Sculp.





From Inigo Jones.

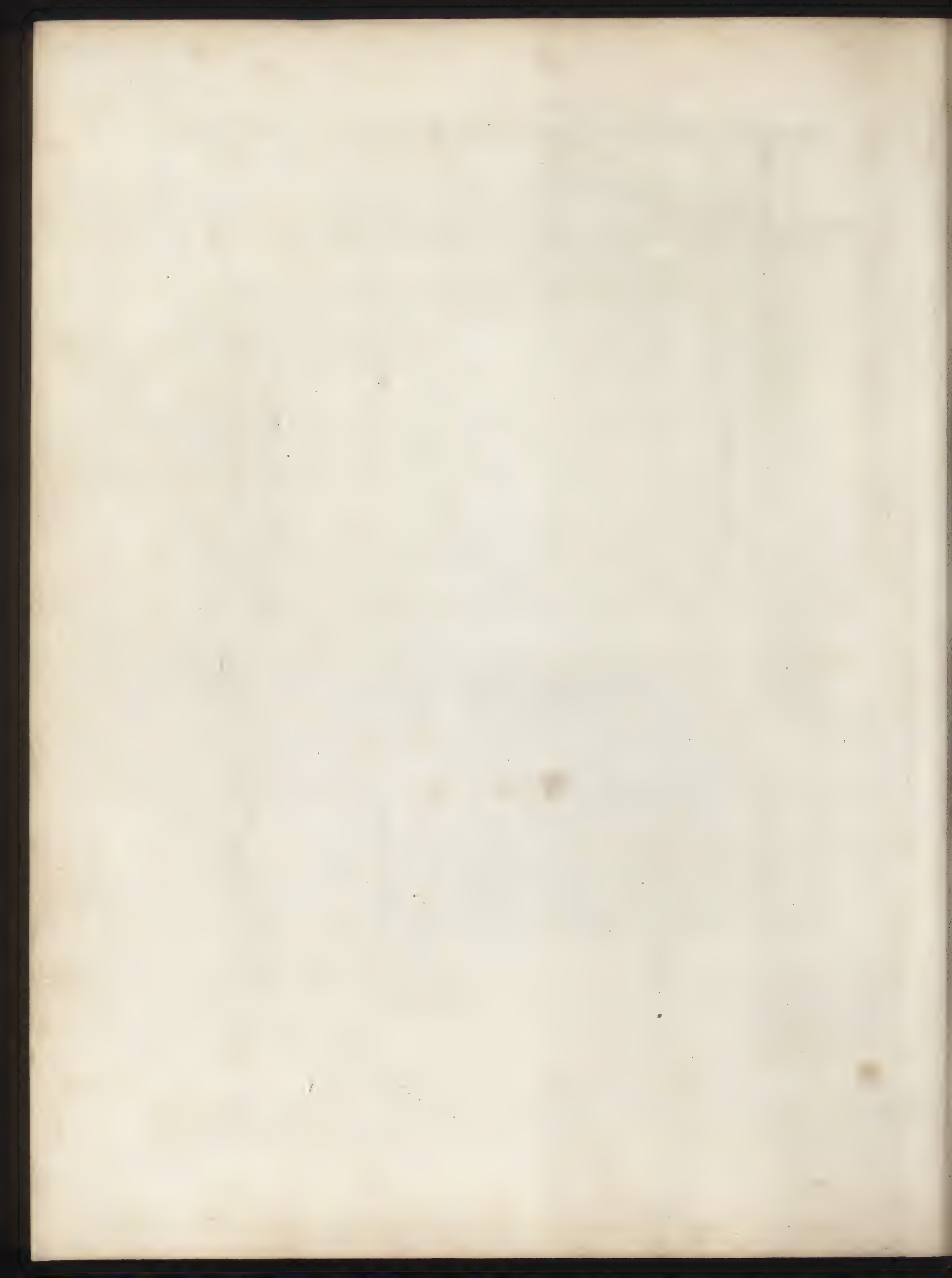
Plate LXXIV.



The Measures Invented proportioned & affixed by Battie Langley.

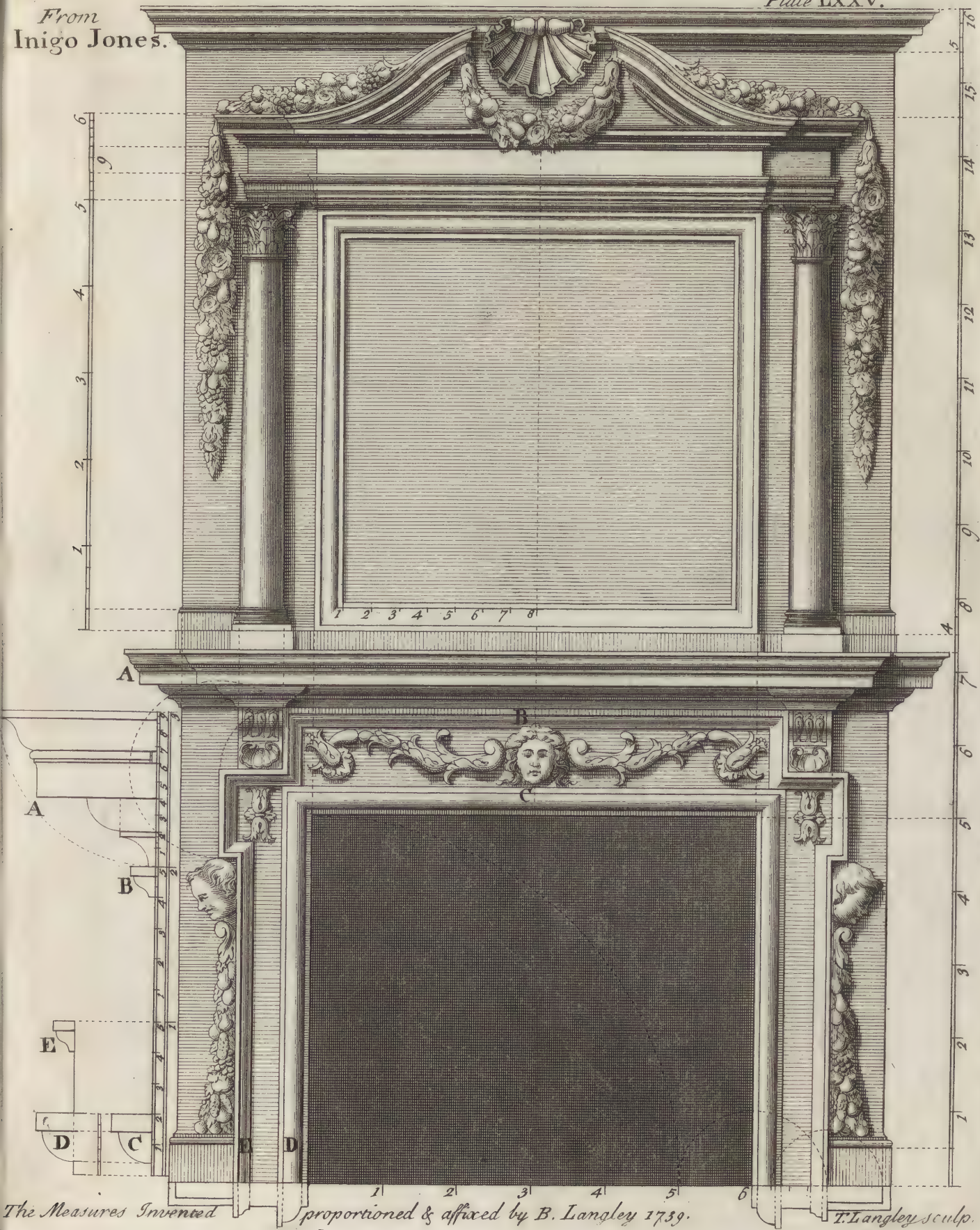
Tho. Langley Delin. & Sculp.







From  
Inigo Jones.



The Measures Invented proportioned & affixed by B. Langley 1739.

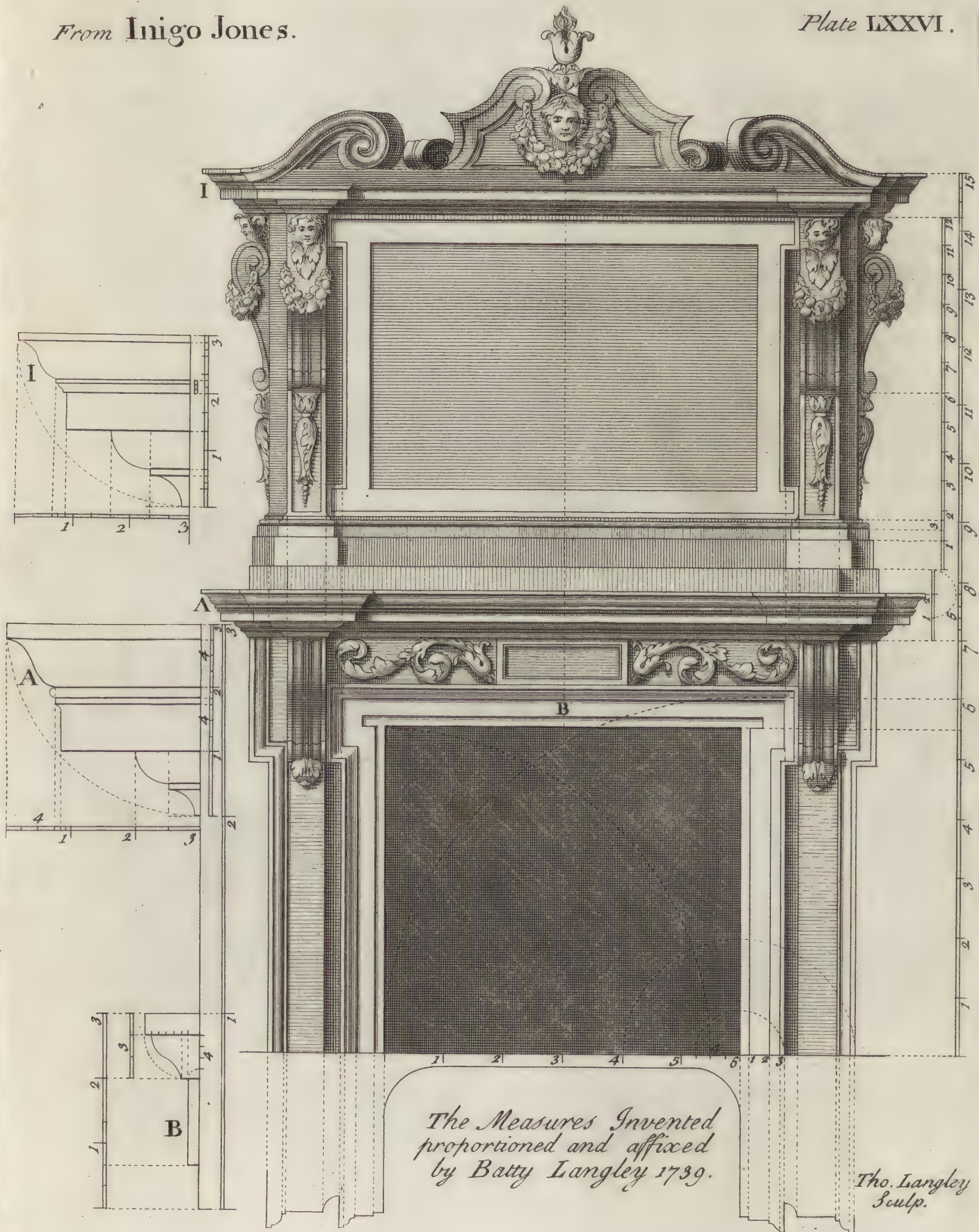
T. Langley sculp.





From Inigo Jones.

Plate LXXVI.

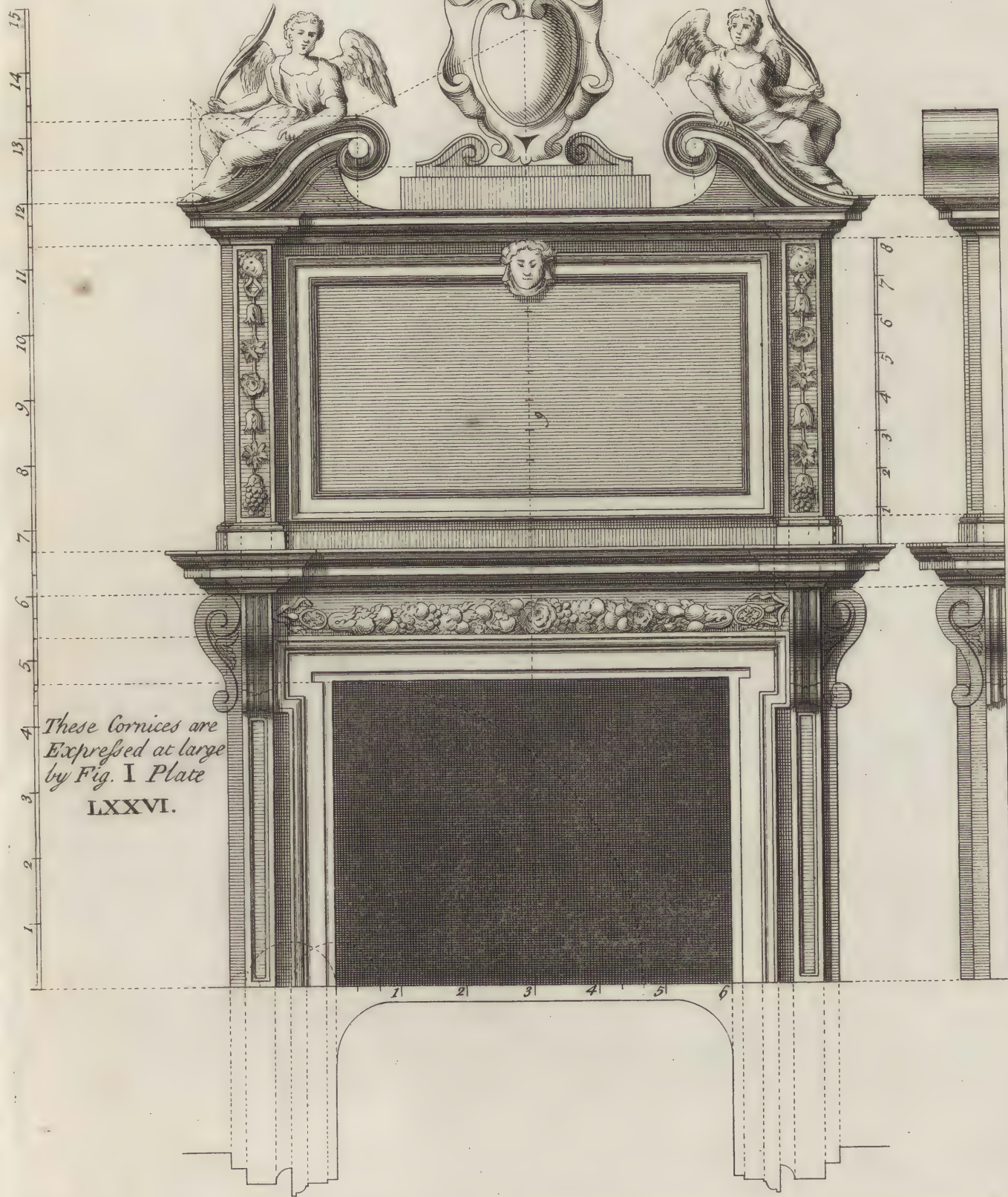






From Inigo Jones.

Plate LXXVII.



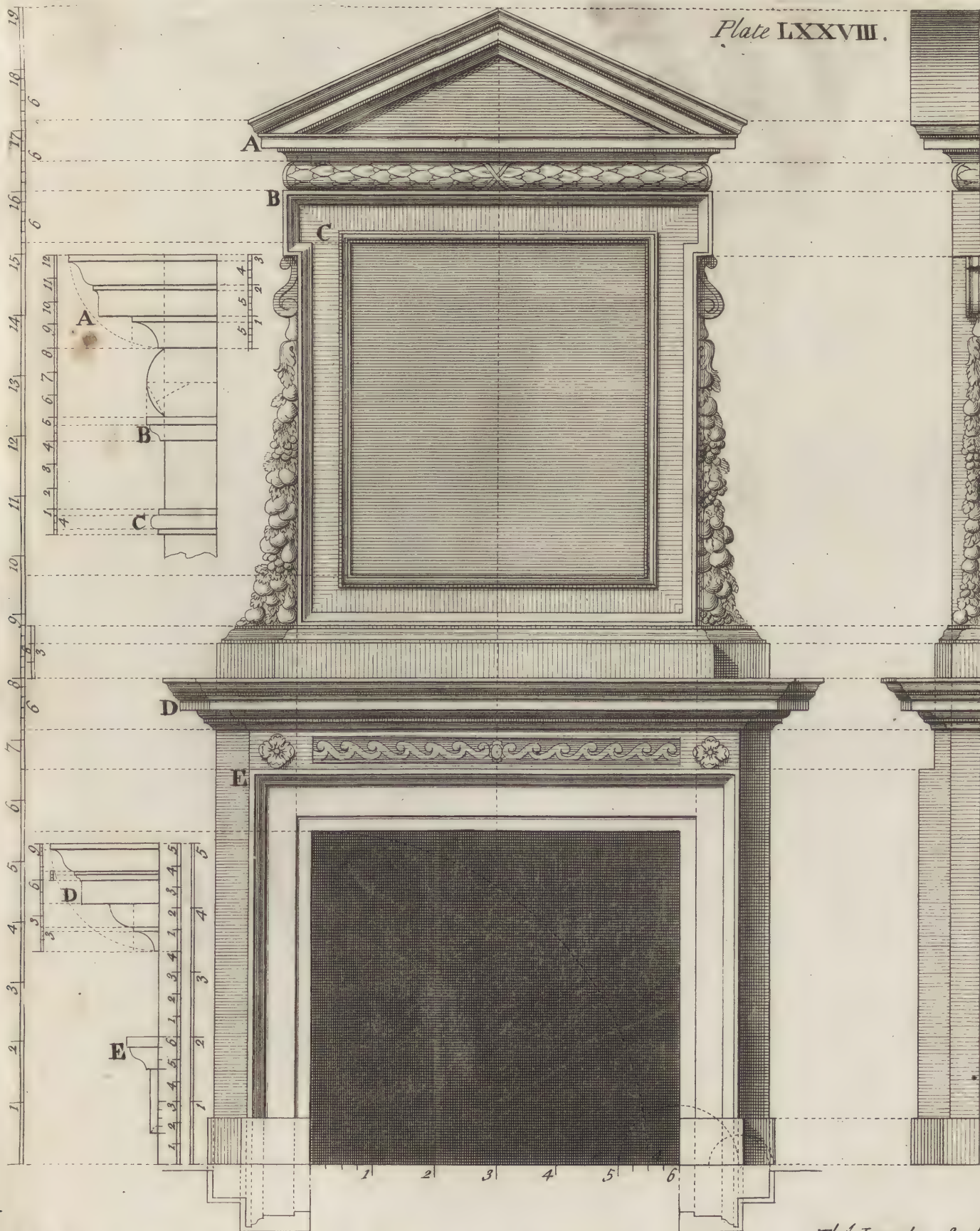
These Cornices are  
Expressed at large  
by Fig. I Plate  
LXXVI.

The Measures Invented and proportioned by Batty Langley 1739.

Tho. Langley Sculp.



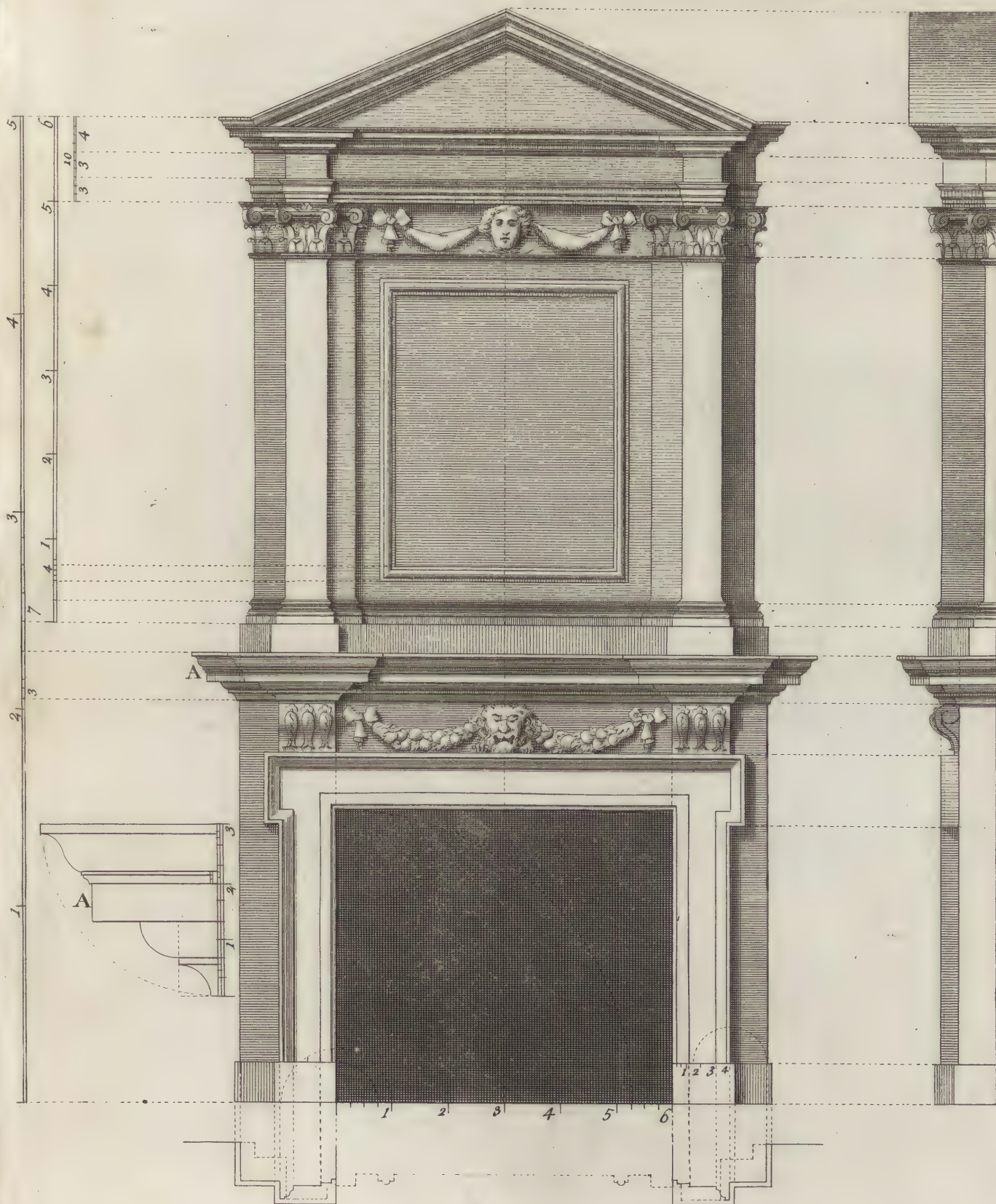




The Measures and Members at large Invented and proportioned by Battie Langley 1739. Tho<sup>s</sup>. Langley Sculp.



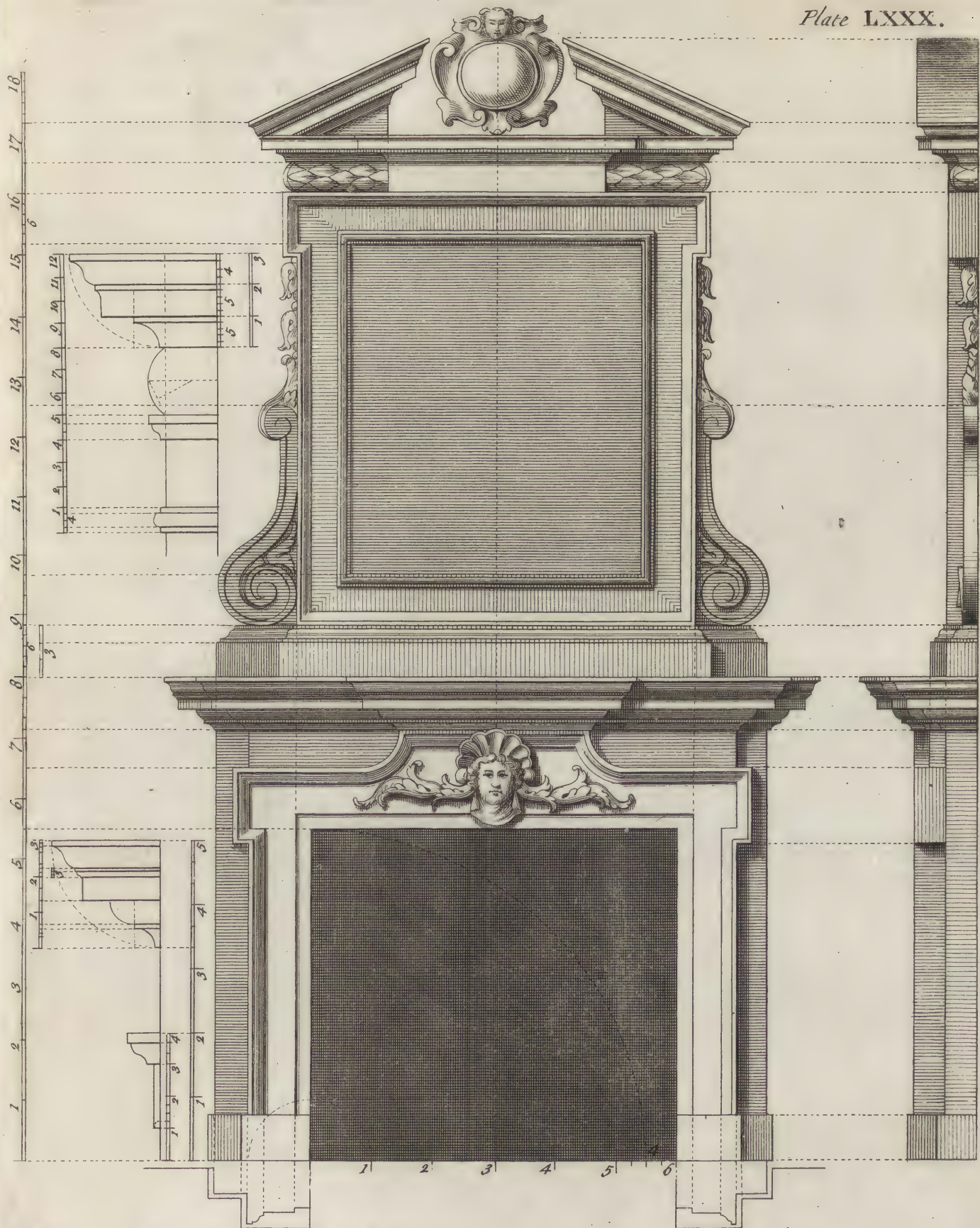




The Measures Invented proportioned and affixed By Battj Langley 1739. Tho<sup>d</sup> Langley Sculp.

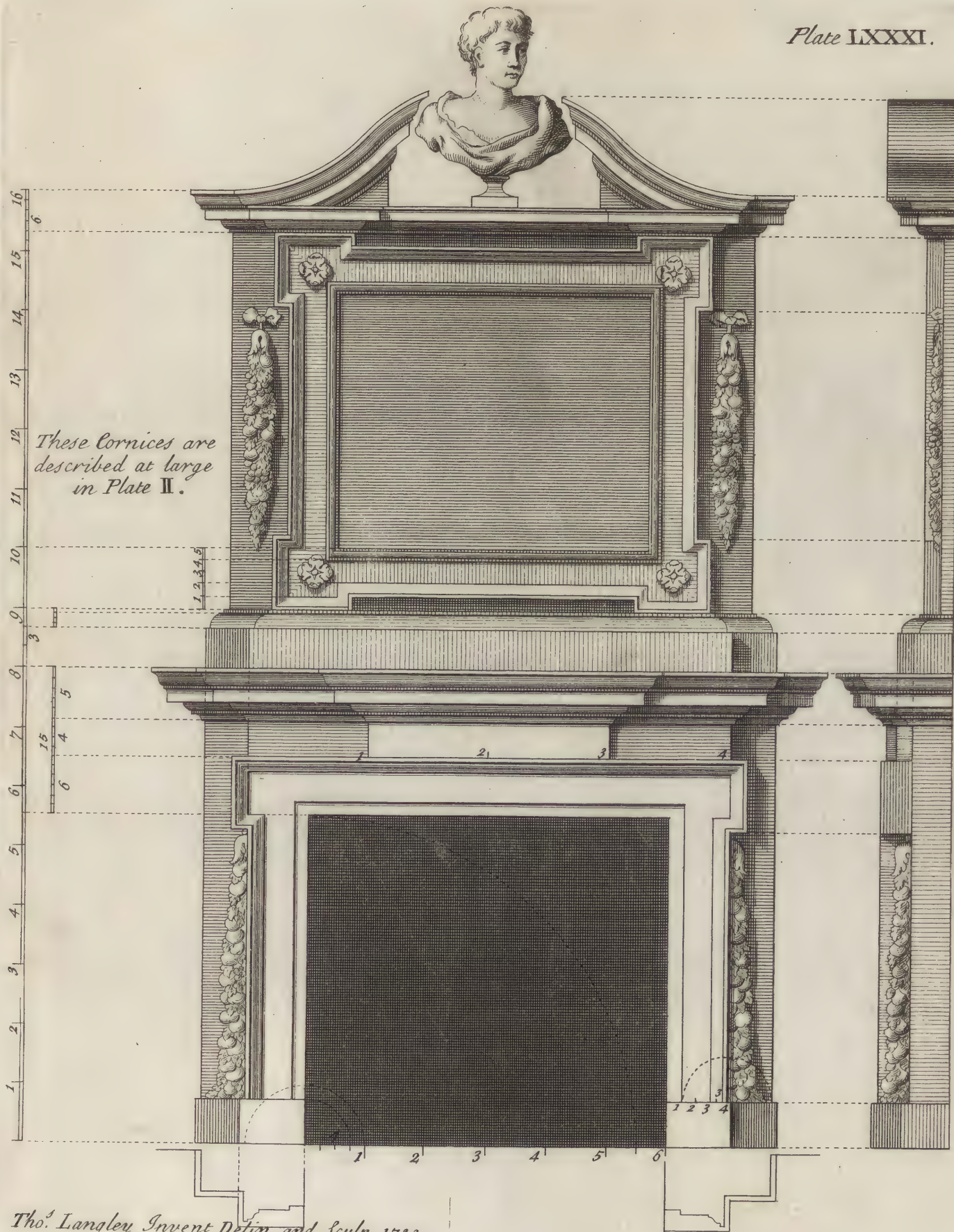








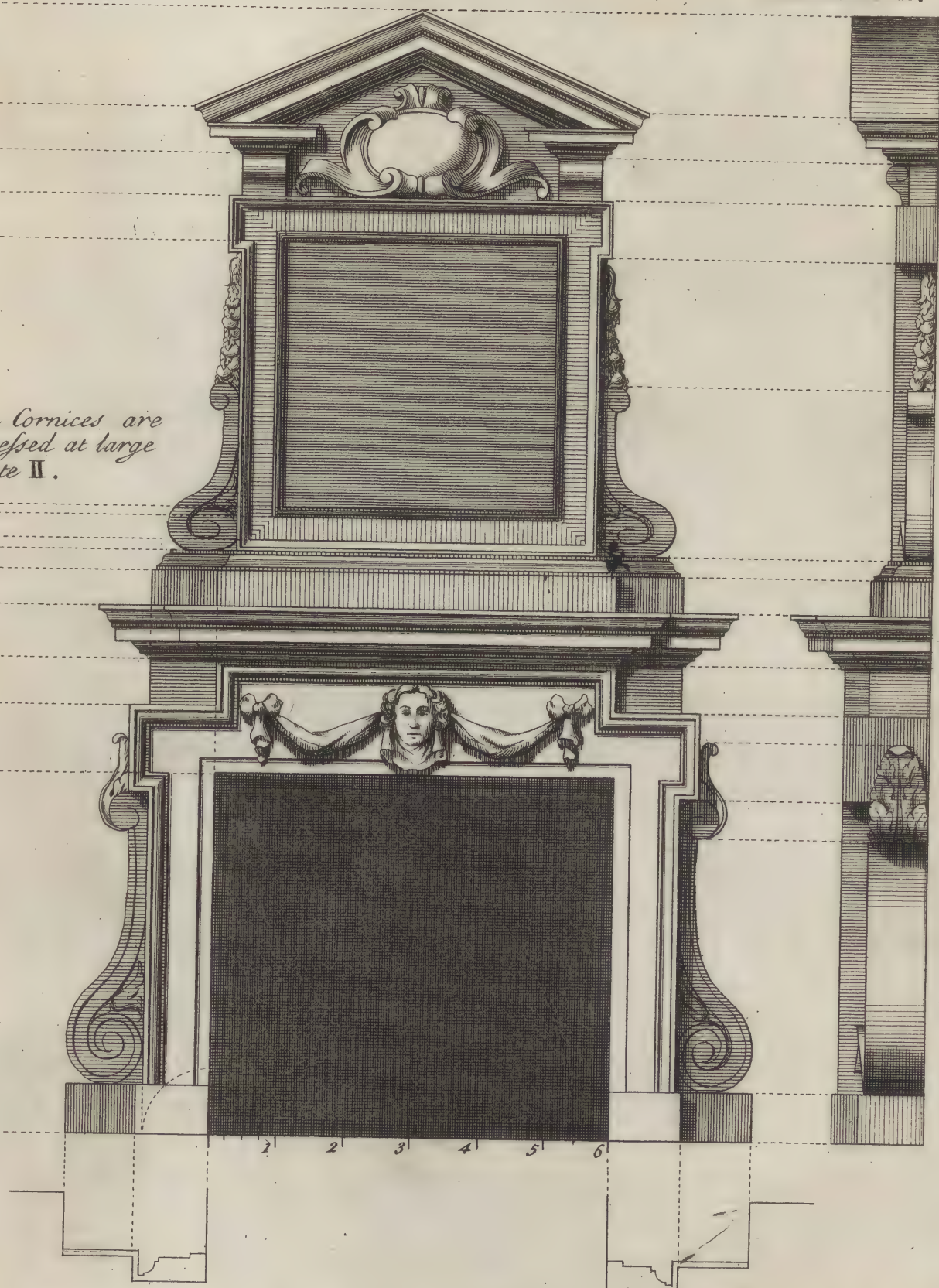






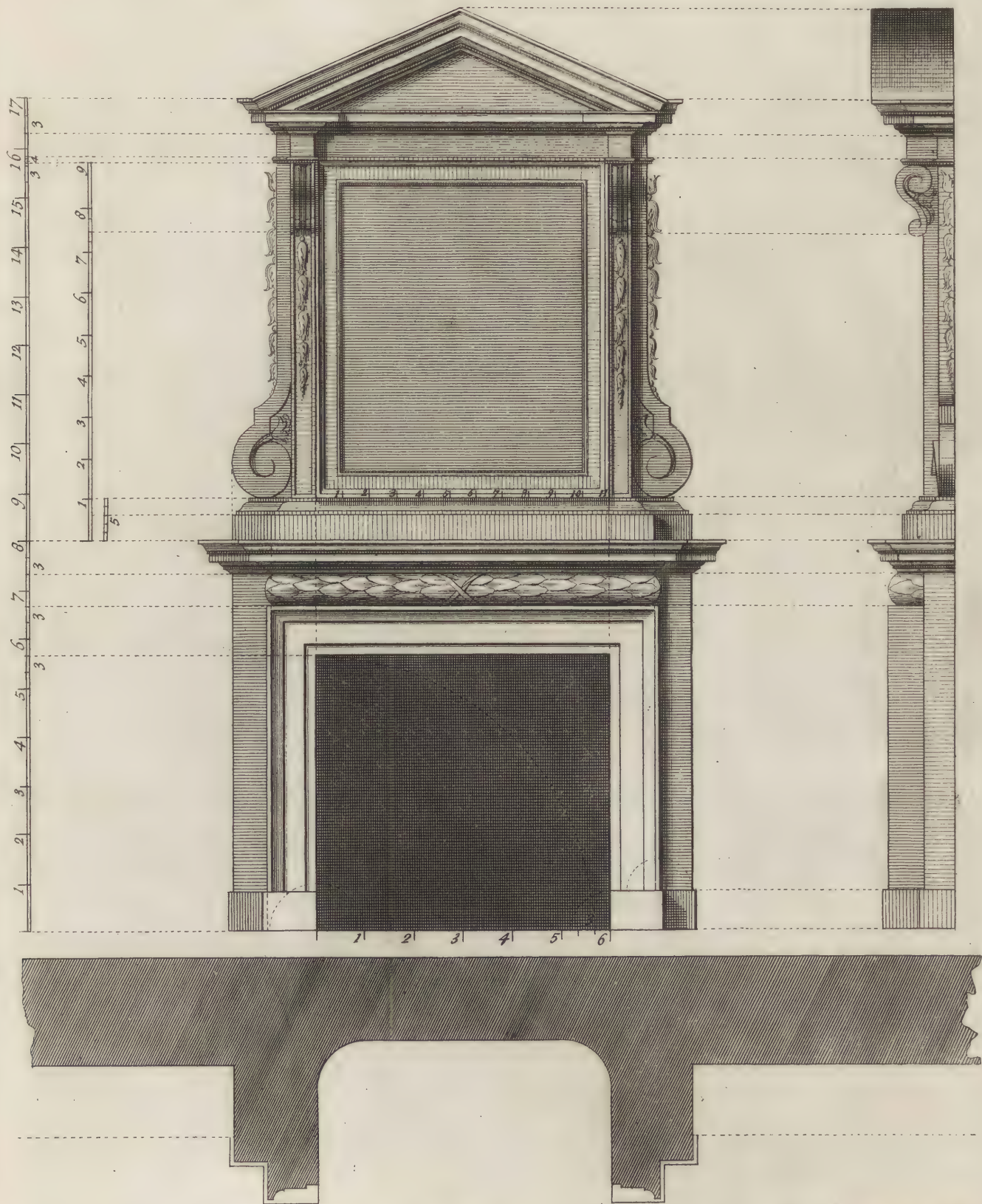


*These Cornices are  
Expressed at large  
in Plate II.*





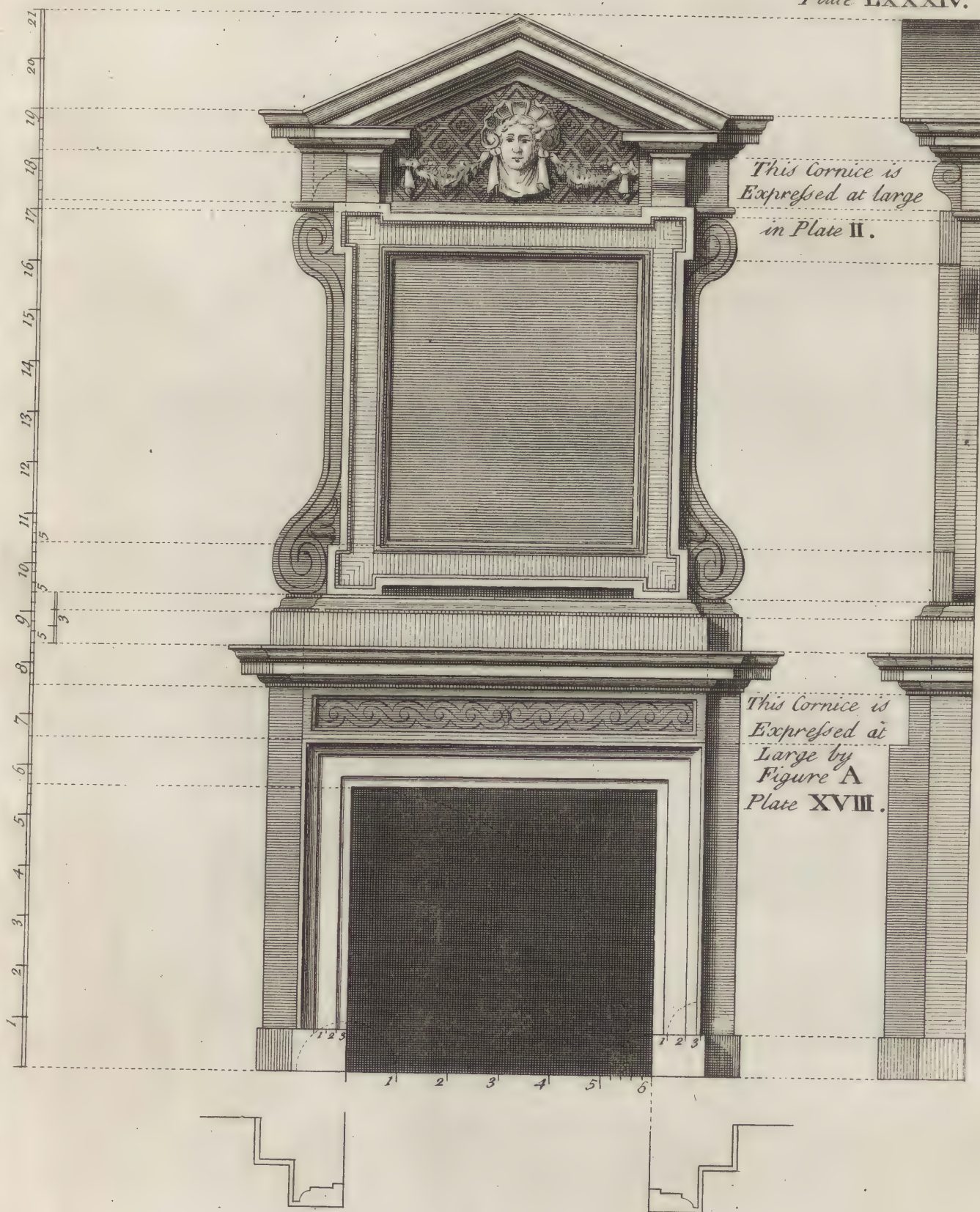




*The Measures Invented, proportioned and affixed by Batty Langley 1739. Tho. Langley Delin. & Sculp.*



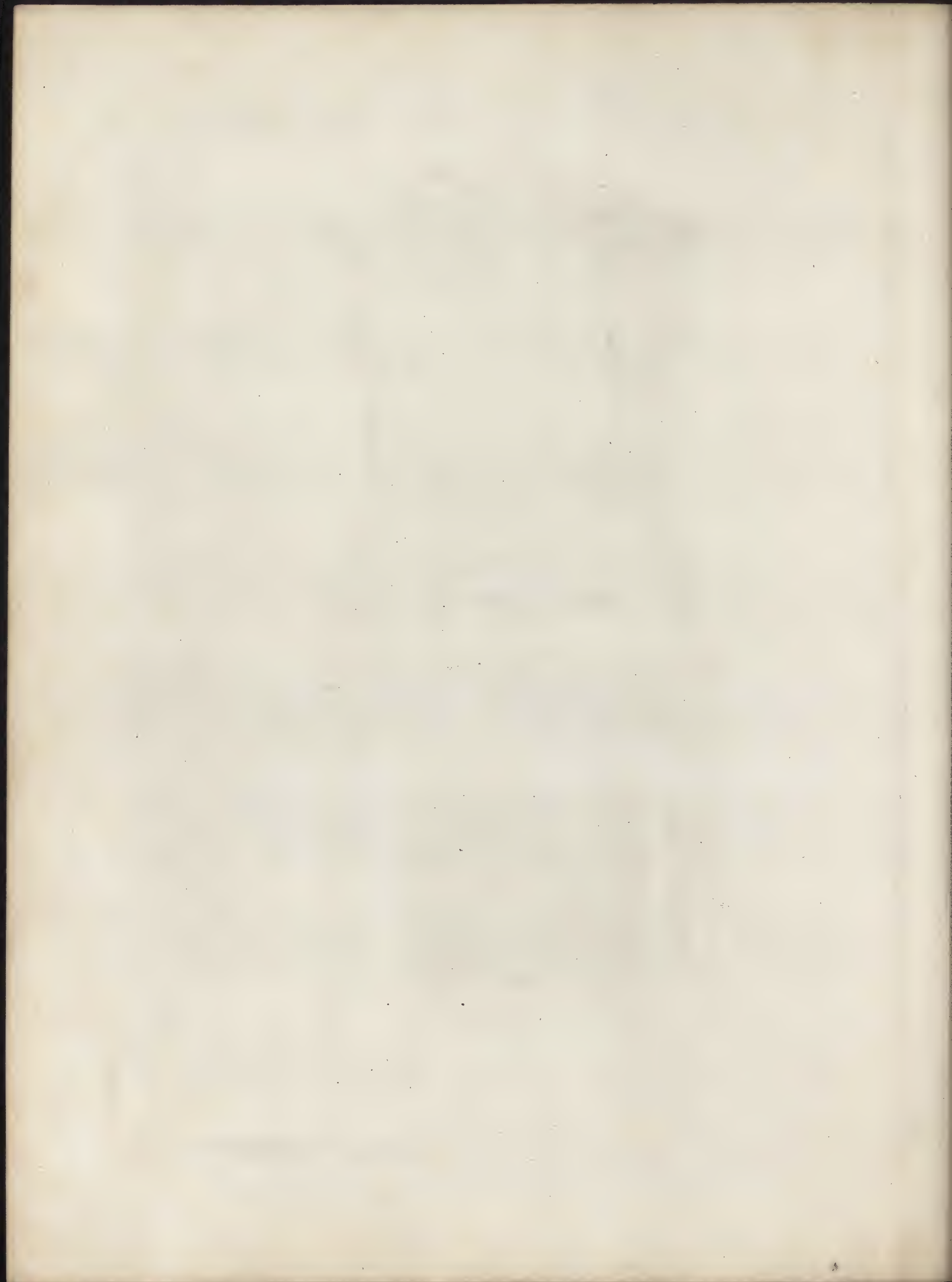


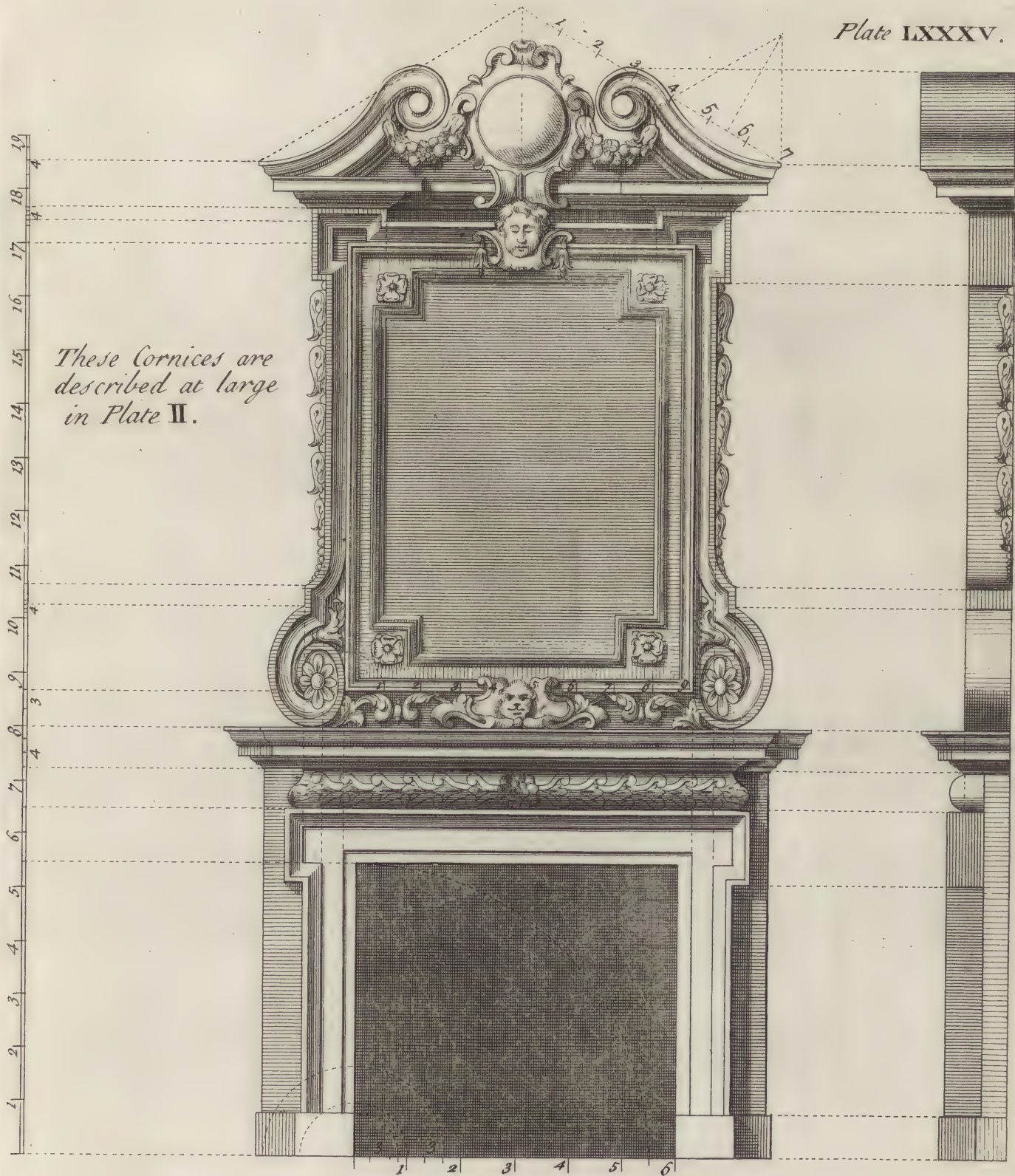


The Measures Invented, proportioned and affixed by Batty Langley 1739.

Tho<sup>s</sup>. Langley Delin. & Sculp.







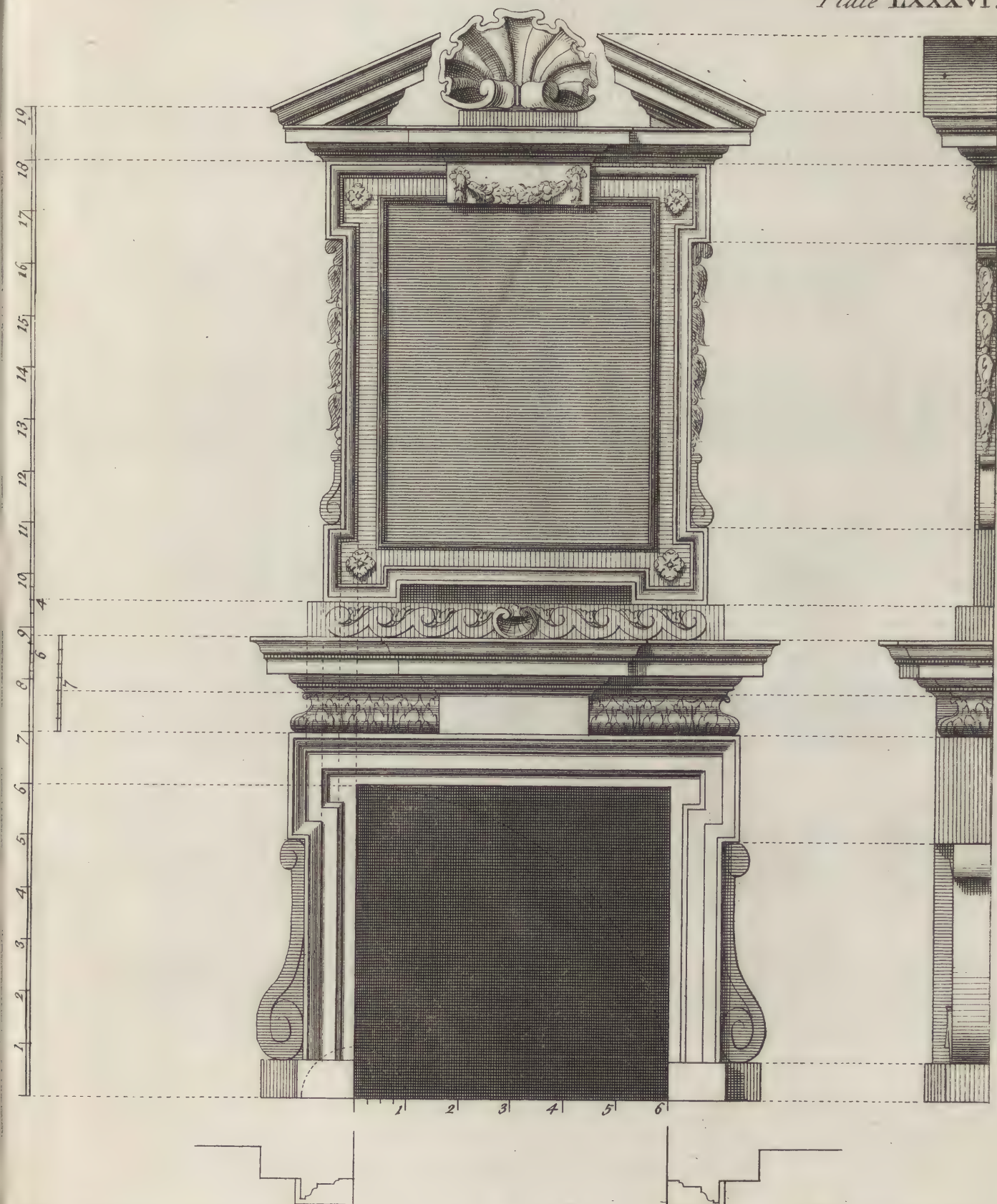
*These Cornices are  
described at large  
in Plate II.*

*The Measures Invented,  
proportioned & affixed  
by Batty Langley 1739.*

*Tho. Langley Delin. & Sculp.*



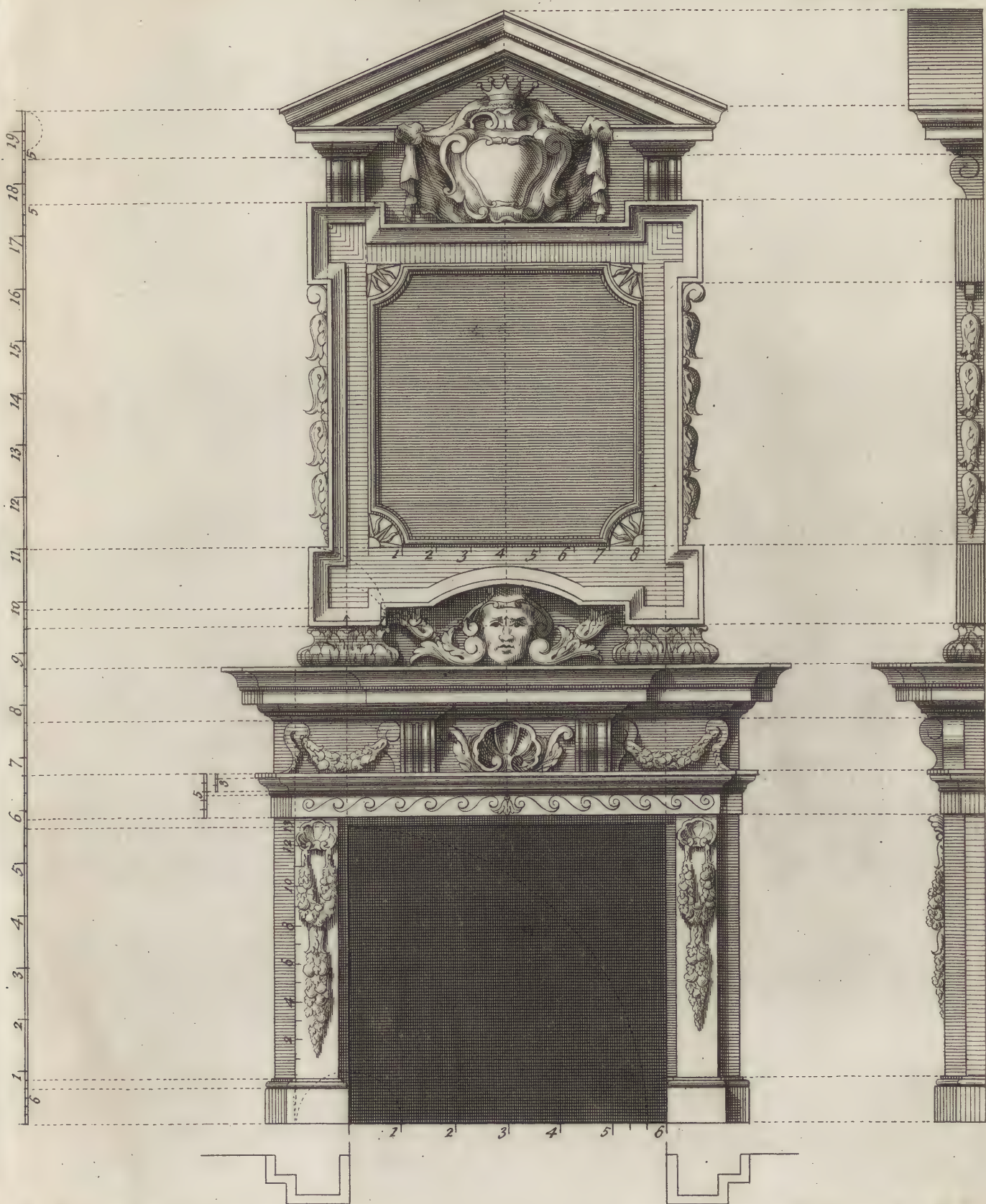




*The Measures Invented Proportioned and affixed by Batty Langley 1739. Tho: Langley Sculp*





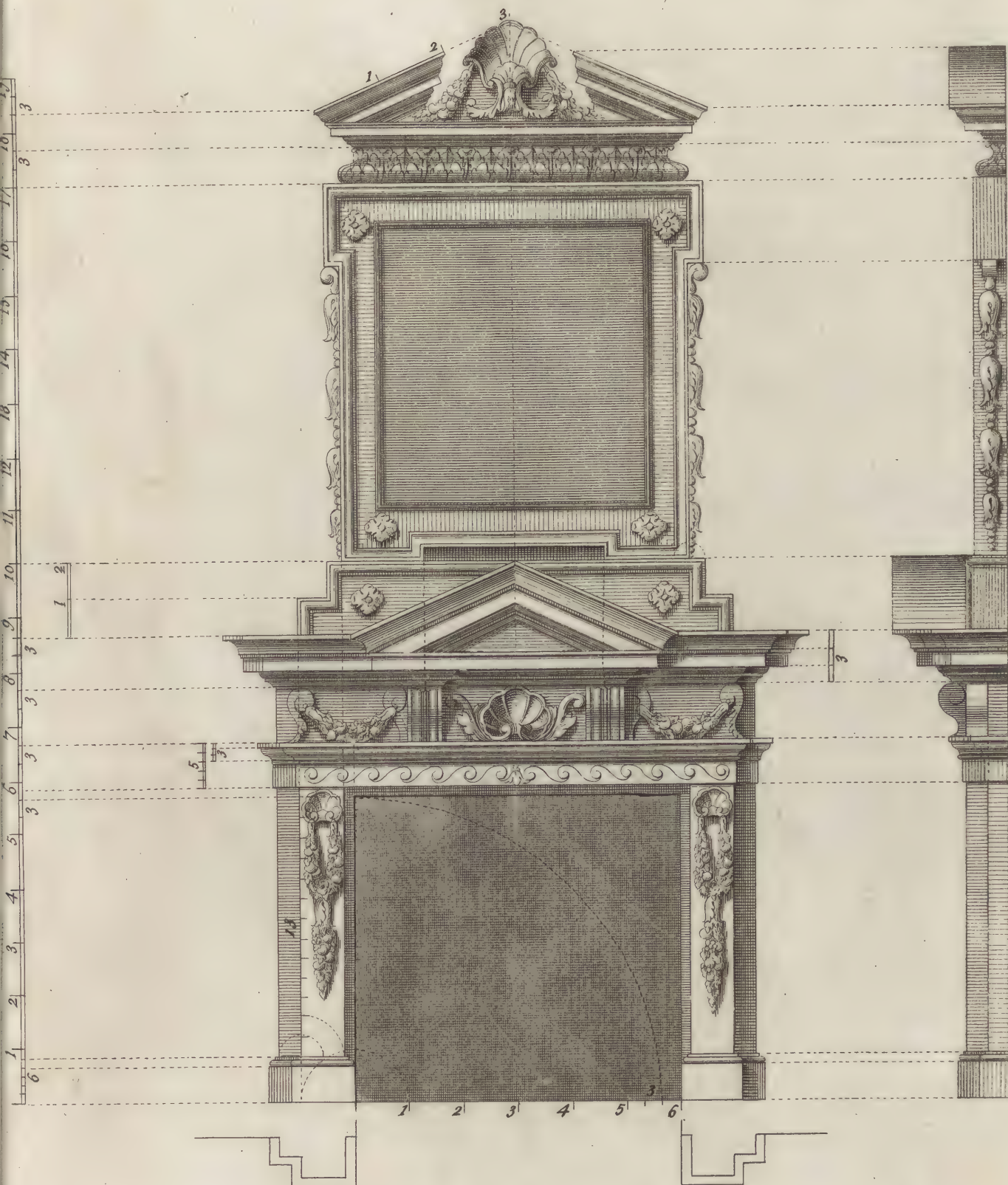


Batty Langley Invent & Delin. 1739.

Tho<sup>s</sup>. Langley Sculp.



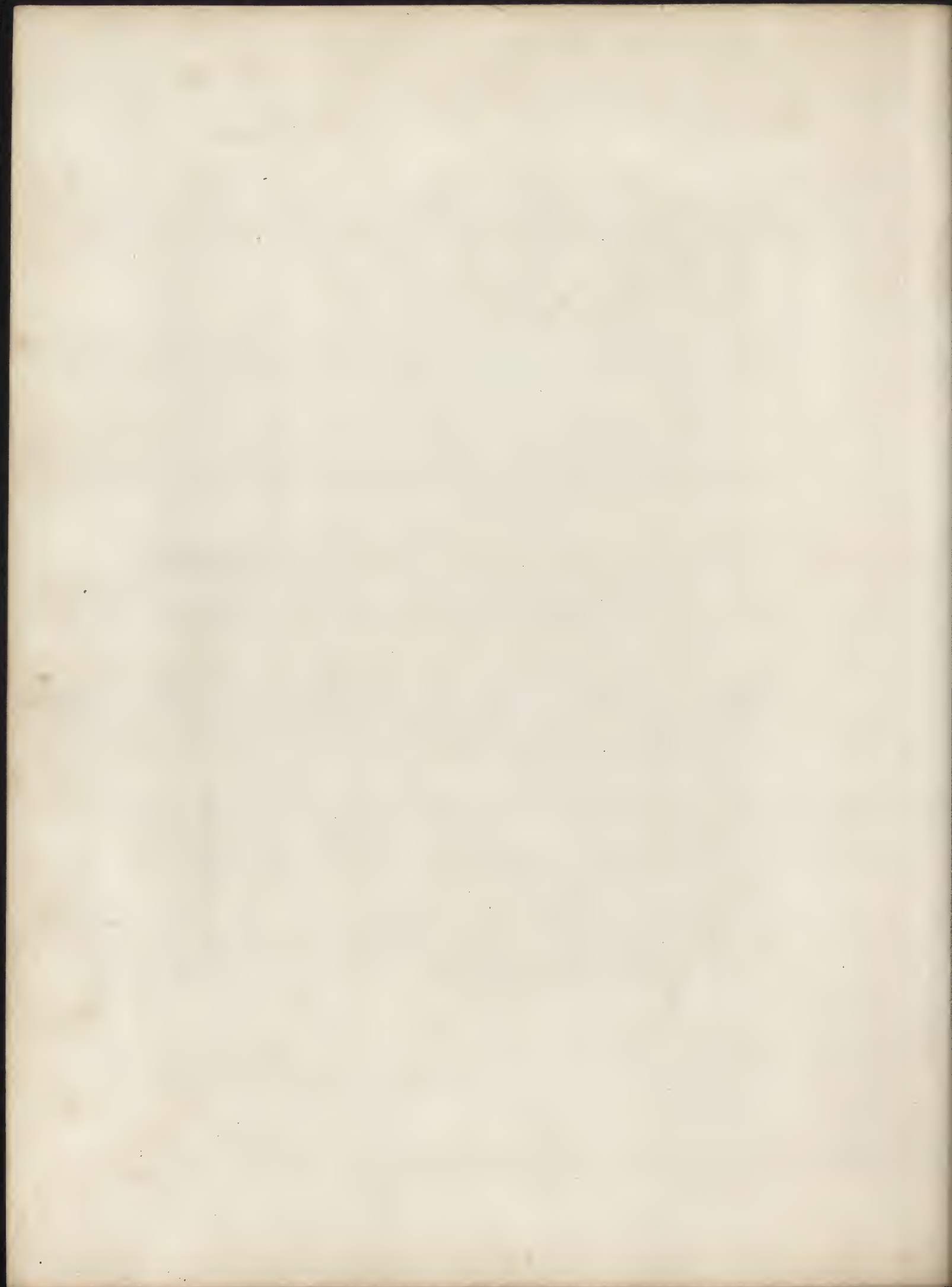


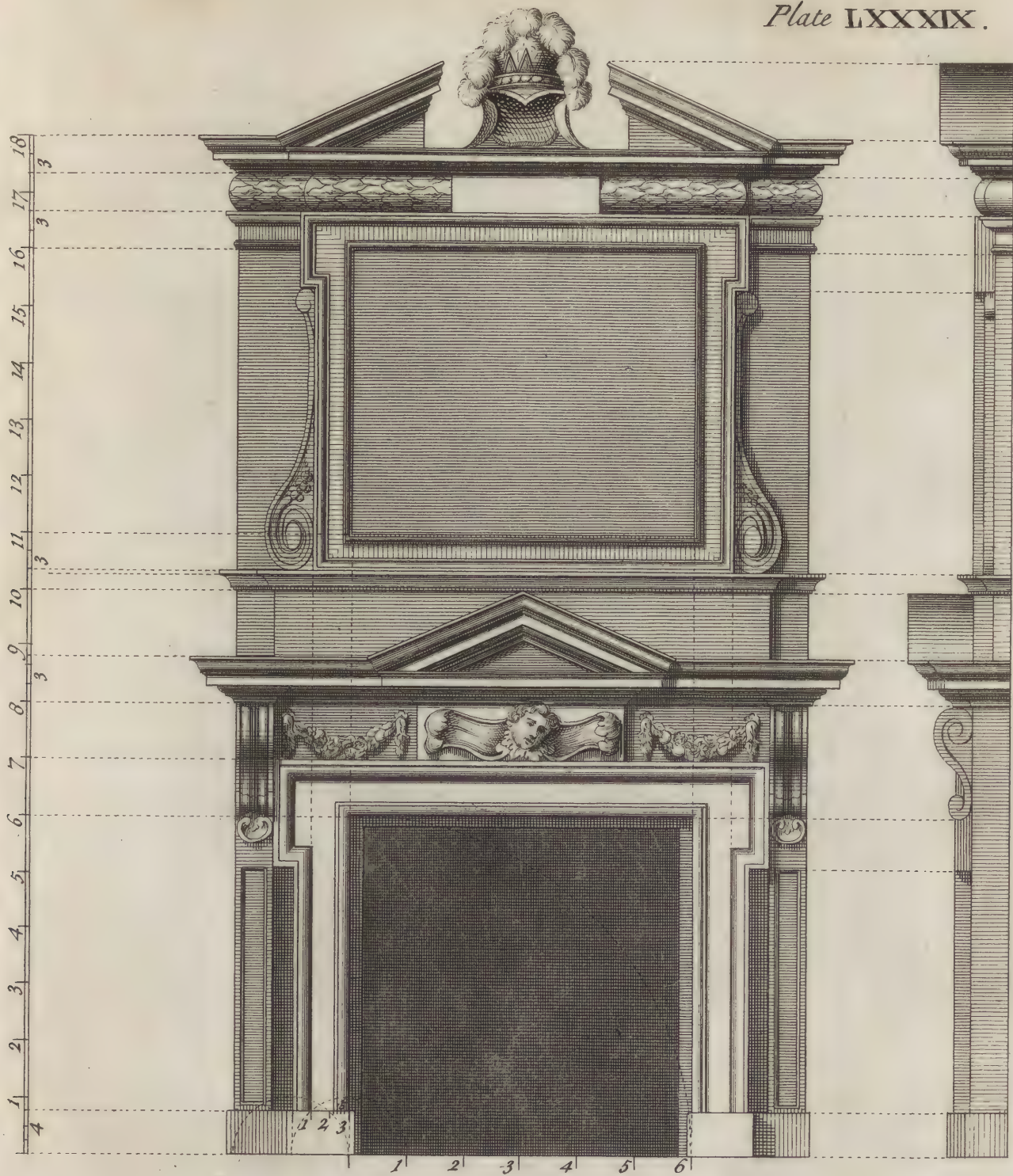


The Measures Invented proportioned and affixed by Batty Langley 1739.

Tho. Langley Sculp.



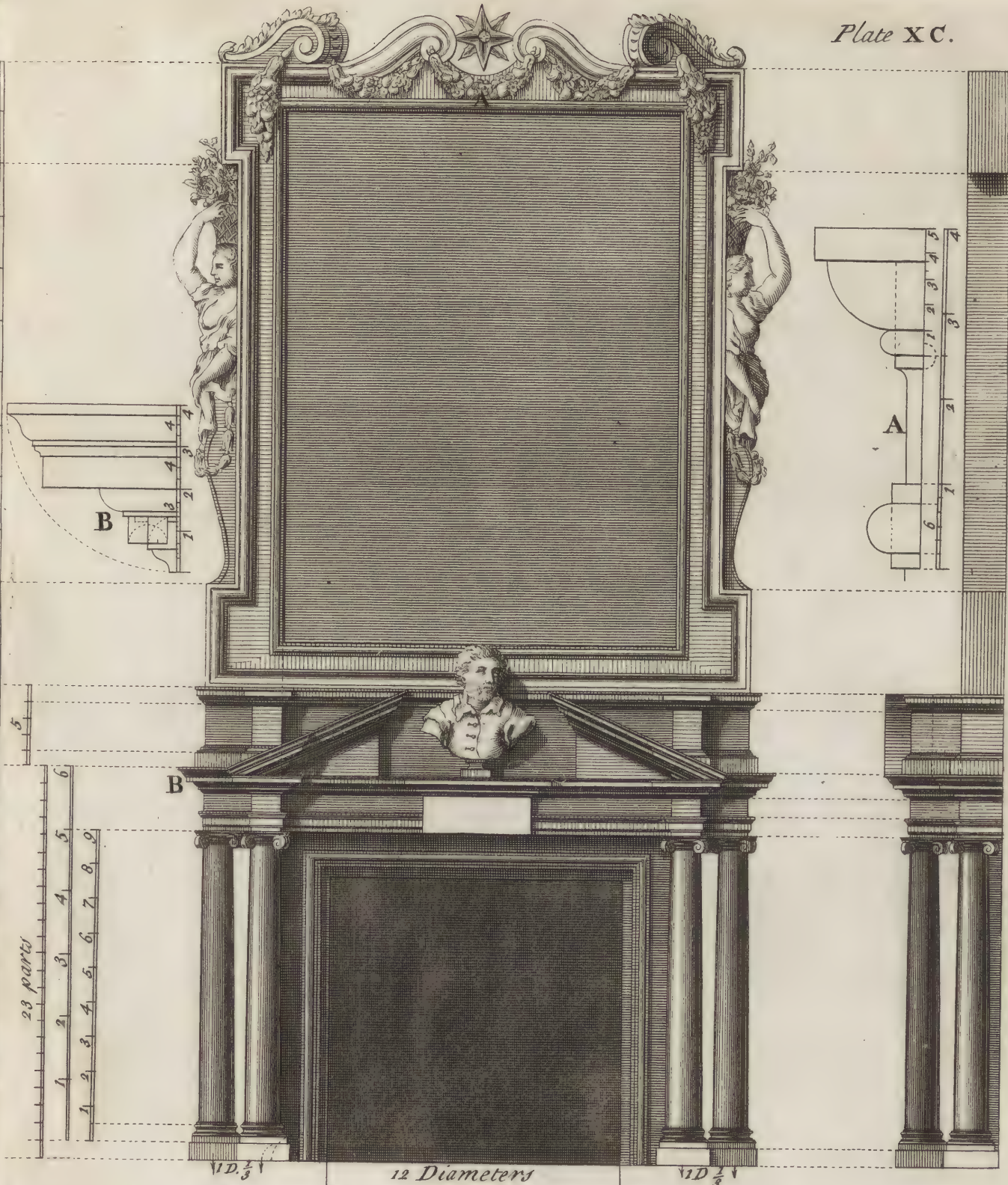




The Measures Invented proportioned and affixed by Batty Langley 1739. Tho.<sup>s</sup> Langley Sculp.





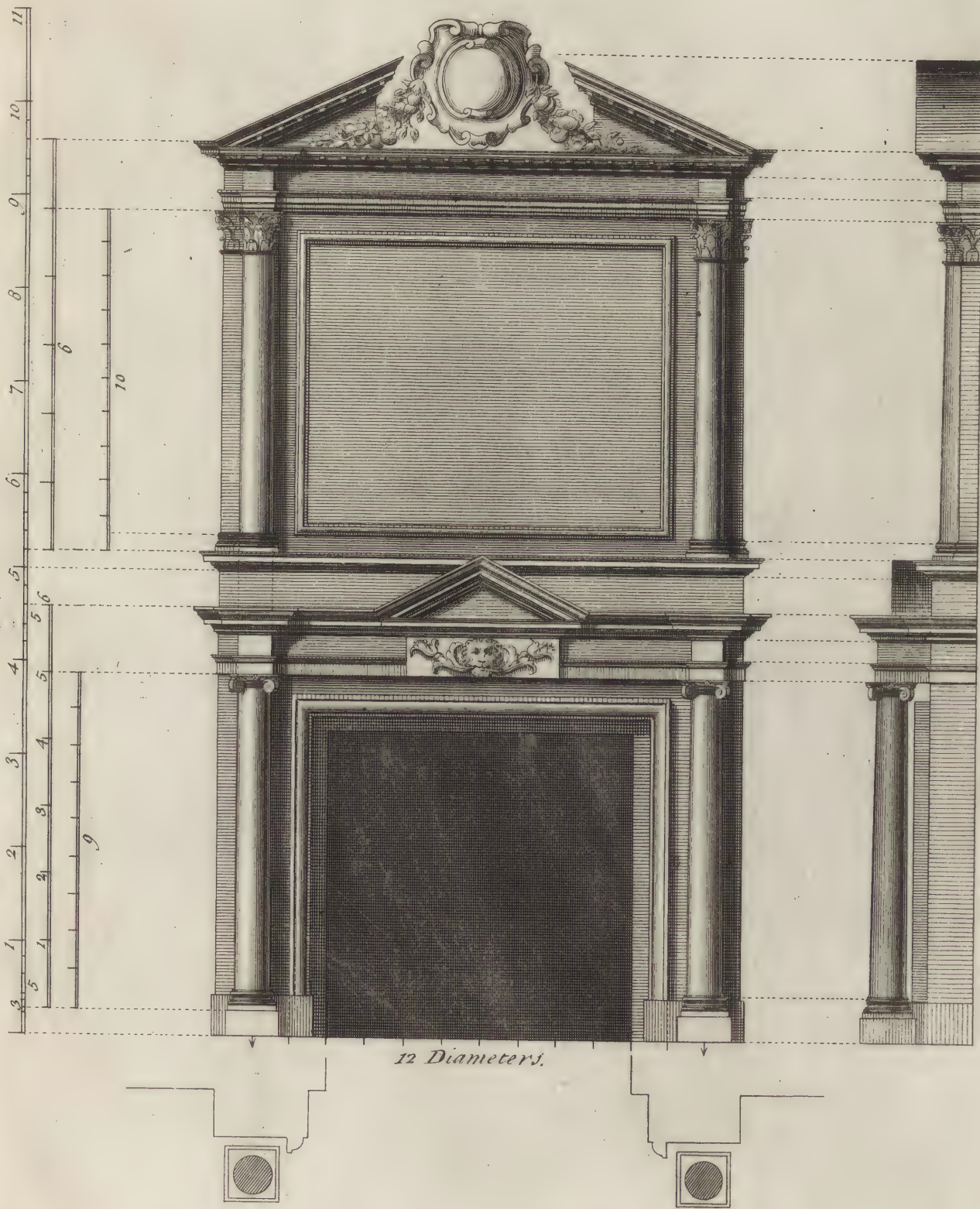


The Measures Invented  
proportioned and affixed  
by Batty Langley 1739.

Tho<sup>s</sup> Langley Sculp.

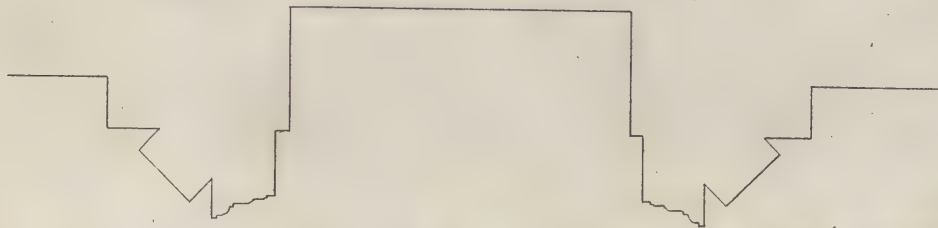
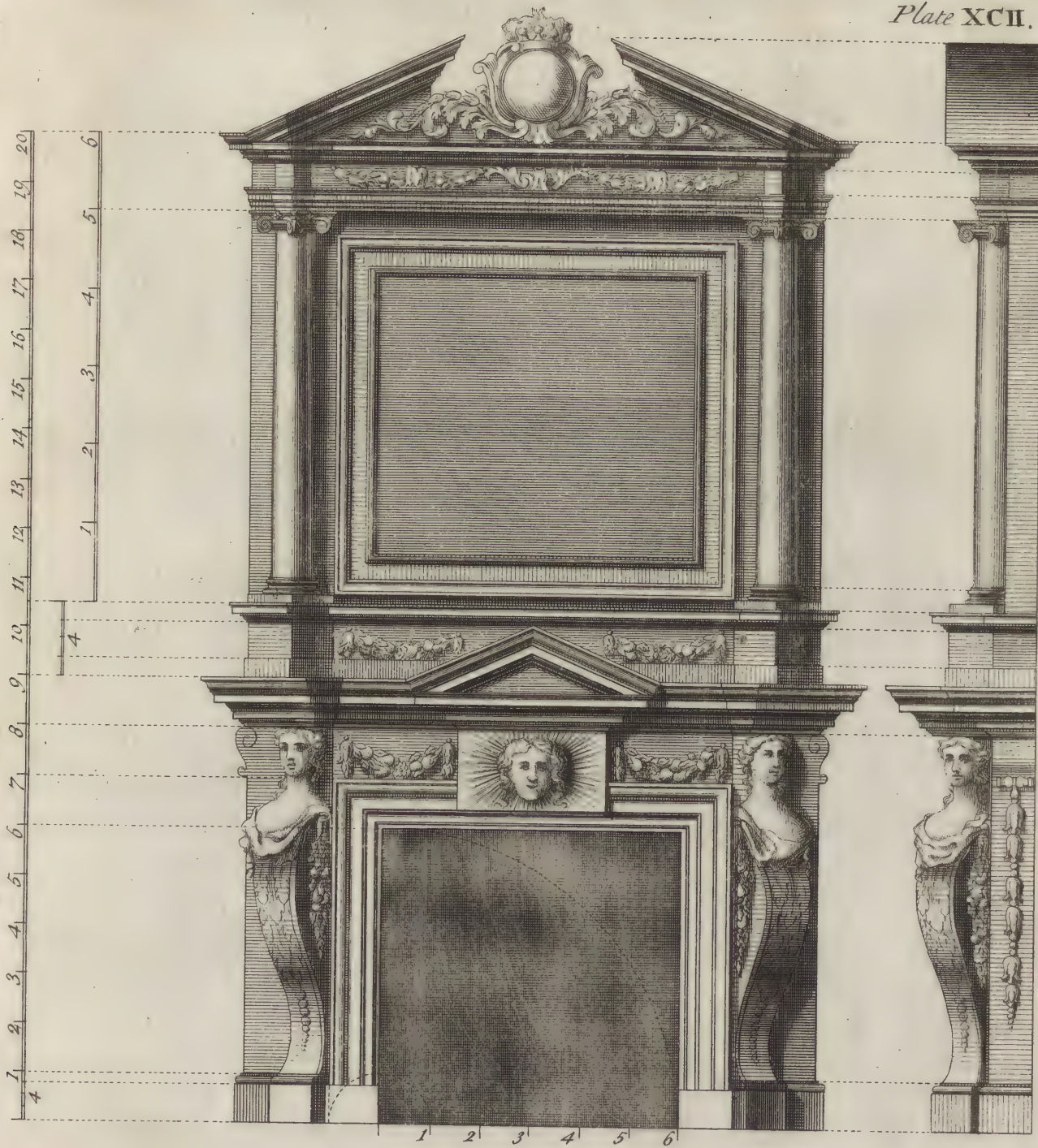










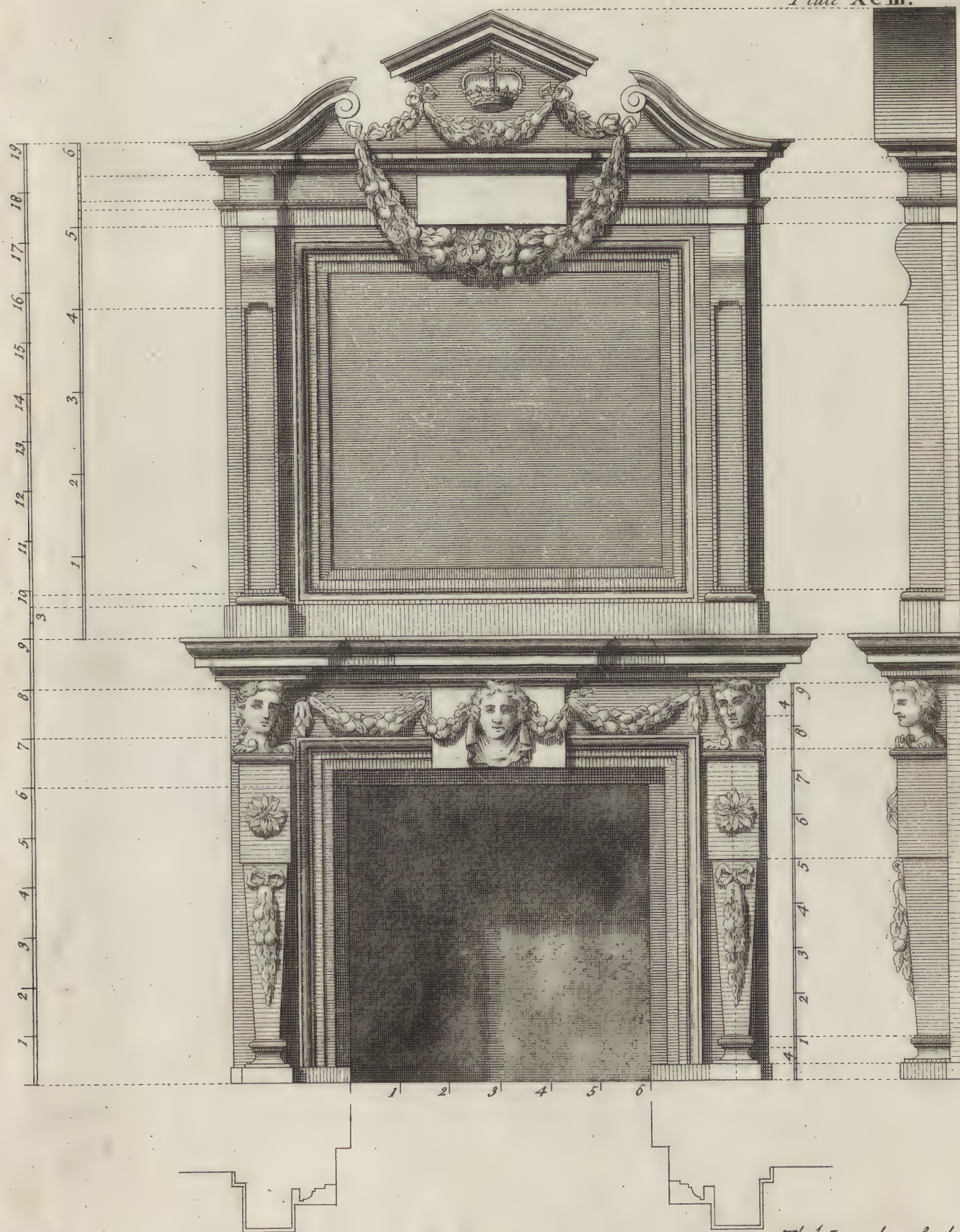


*The Measures Invented proportioned and affixed by Batty Langley 1739.*

*Tho. Langley Delin. & Sculp.*



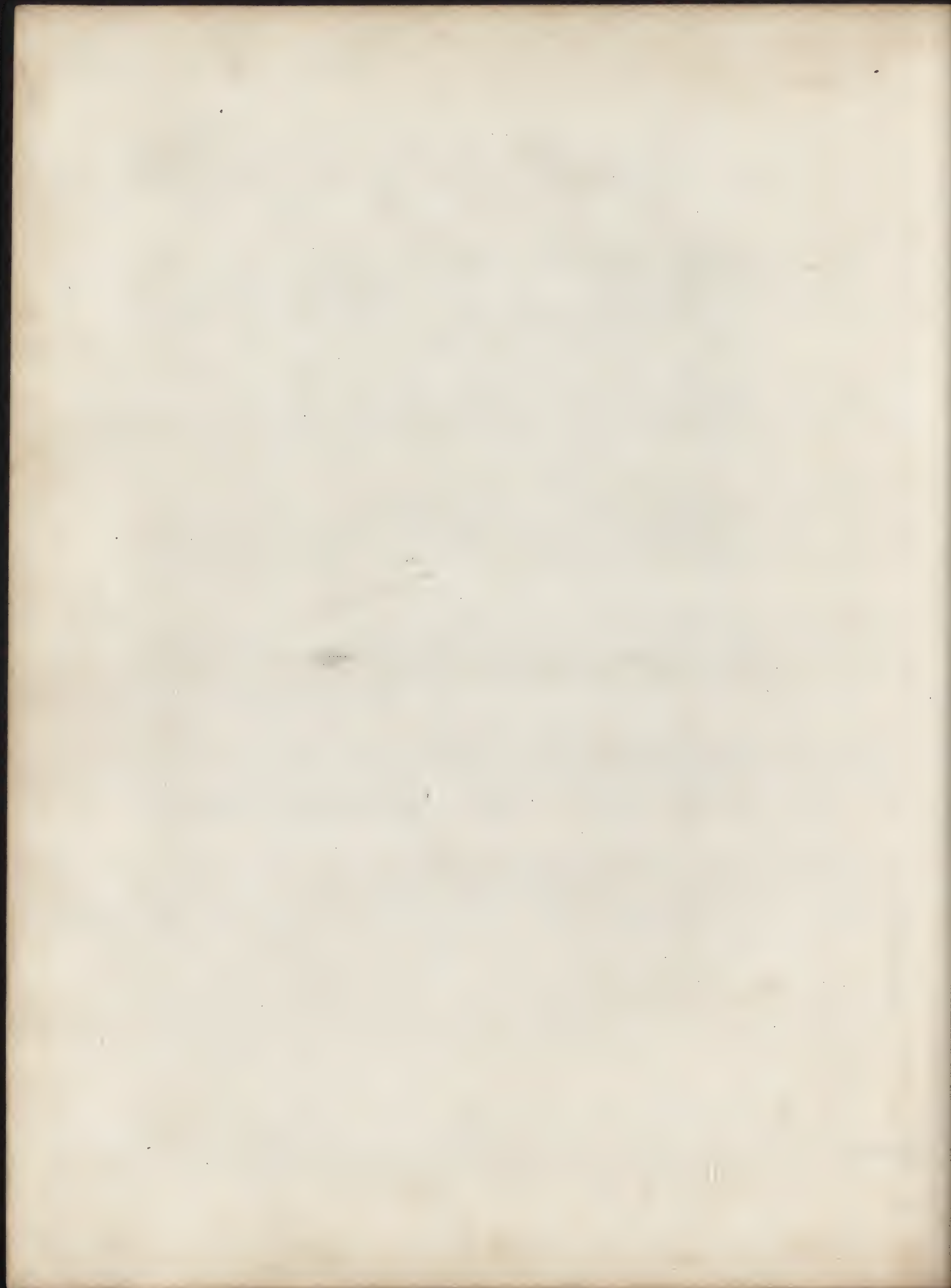




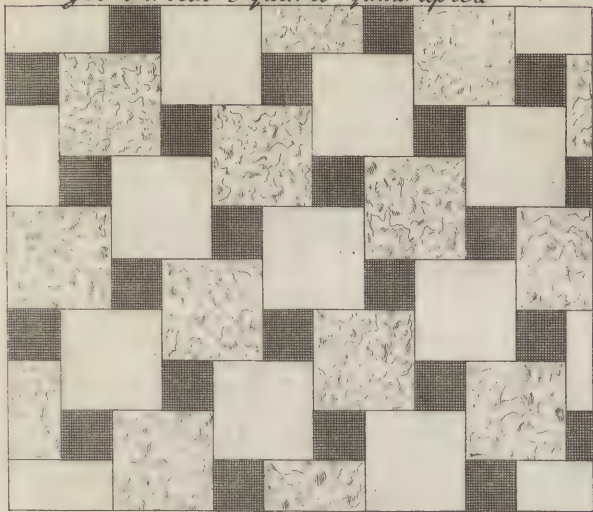
The Measures Invented proportioned and affixed by Batty Langley 1759.

Tho. Langley Sculp.

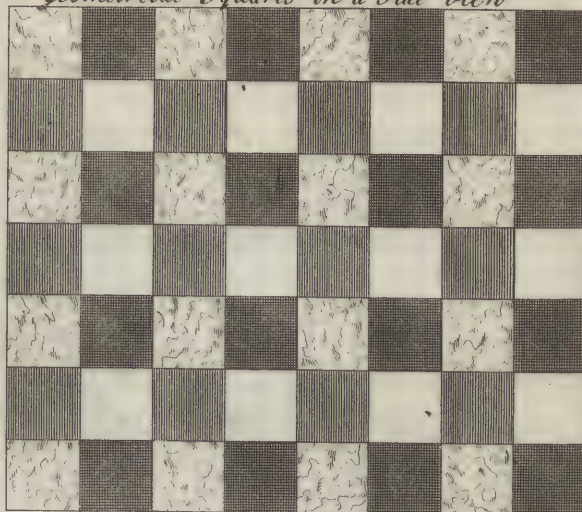




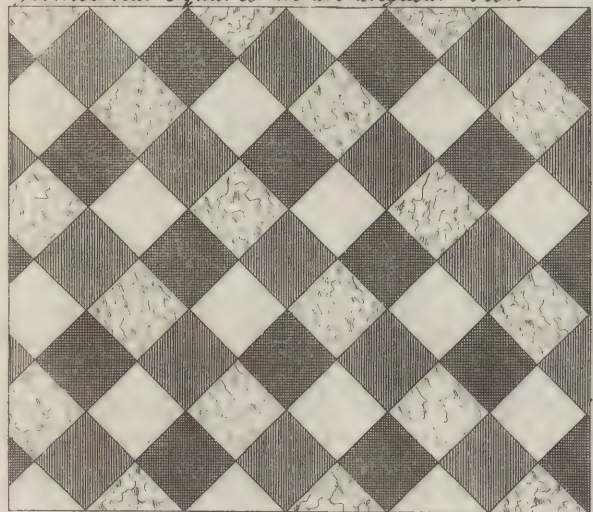
*Geometrical Squares quadrupled*



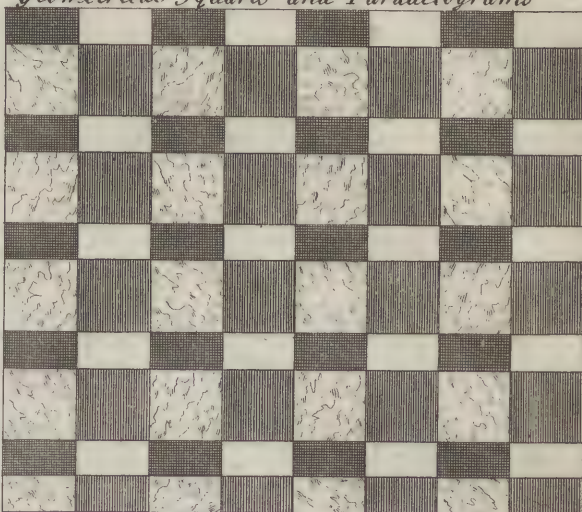
*Geometrical Squares in a Side view*



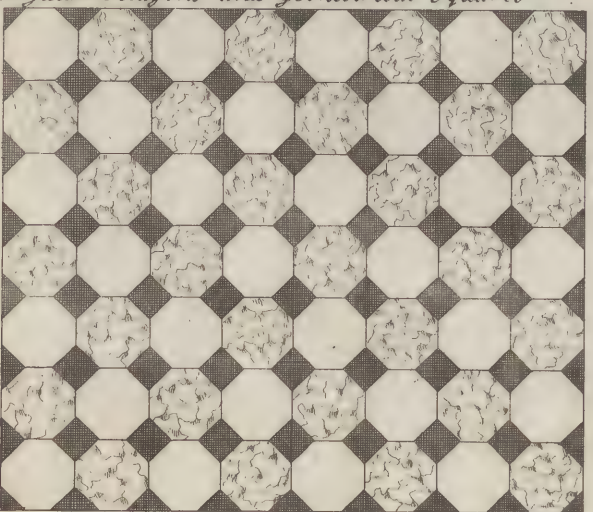
*Geometrical Squares in an angular view*



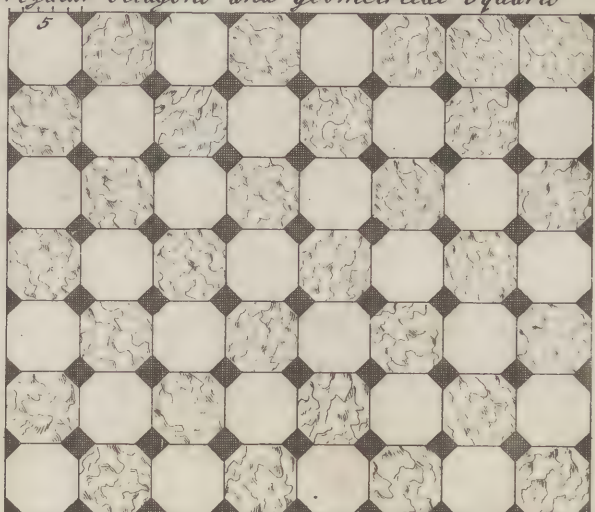
*Geometrical Squares and Parallelograms*



*Regular Octagons and Geometrical Squares*



*Irregular Octagons and Geometrical Squares*





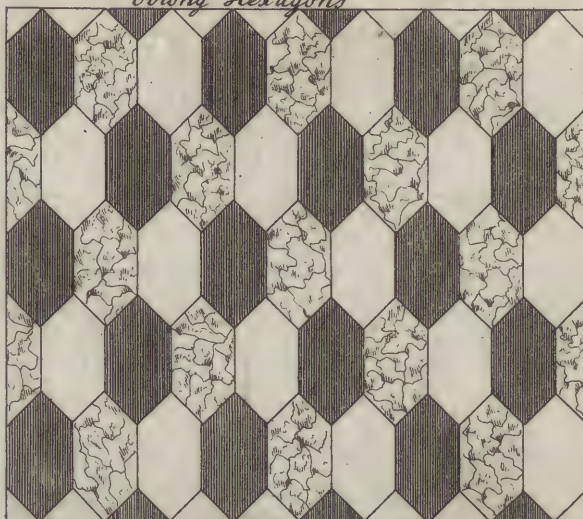




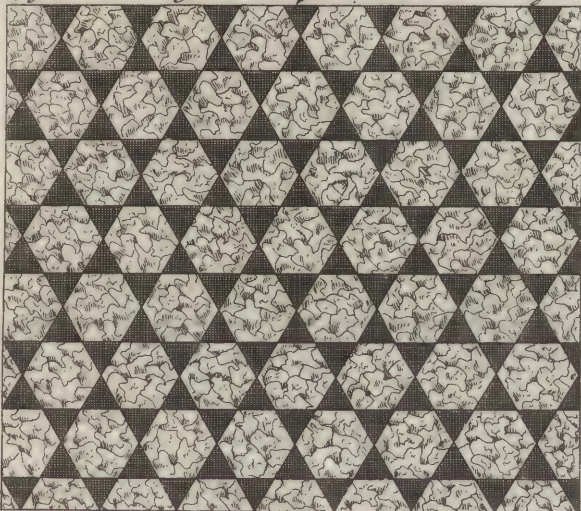
*Trapezoids*



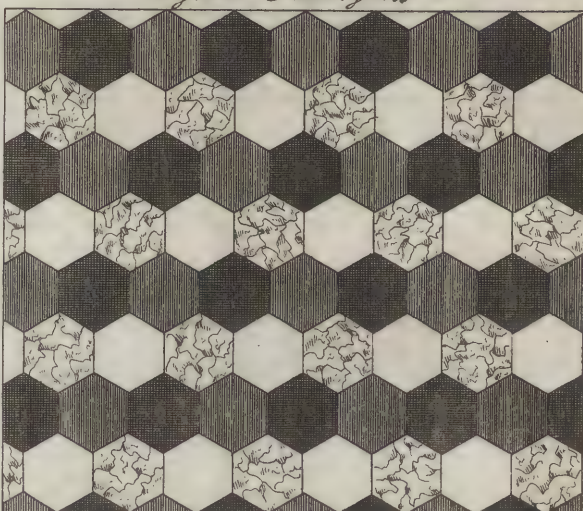
*Oblong Hexagons*



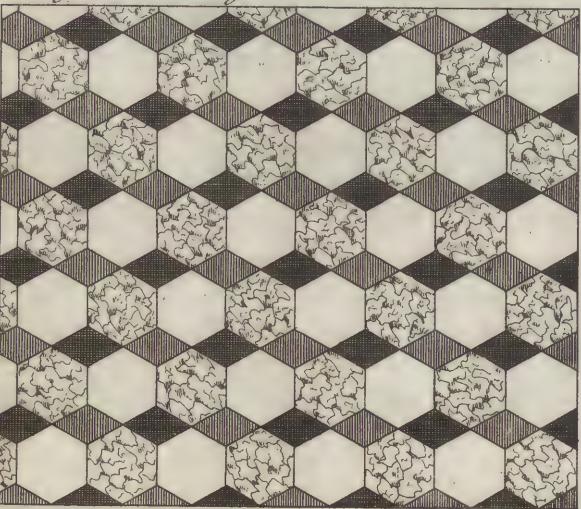
*Regular Hexagons & equilateral Triangles*



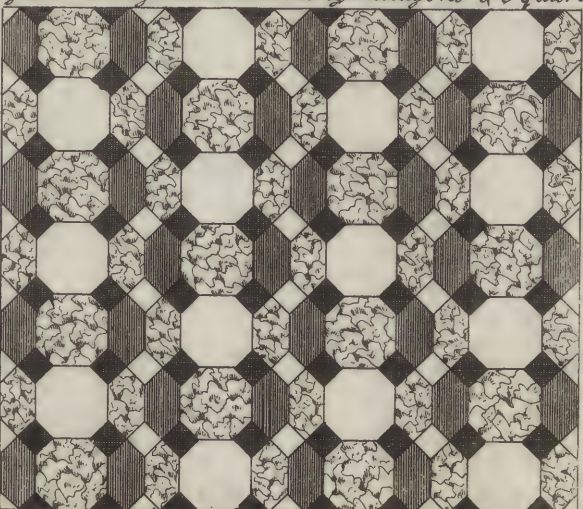
*Regular Hexagons*



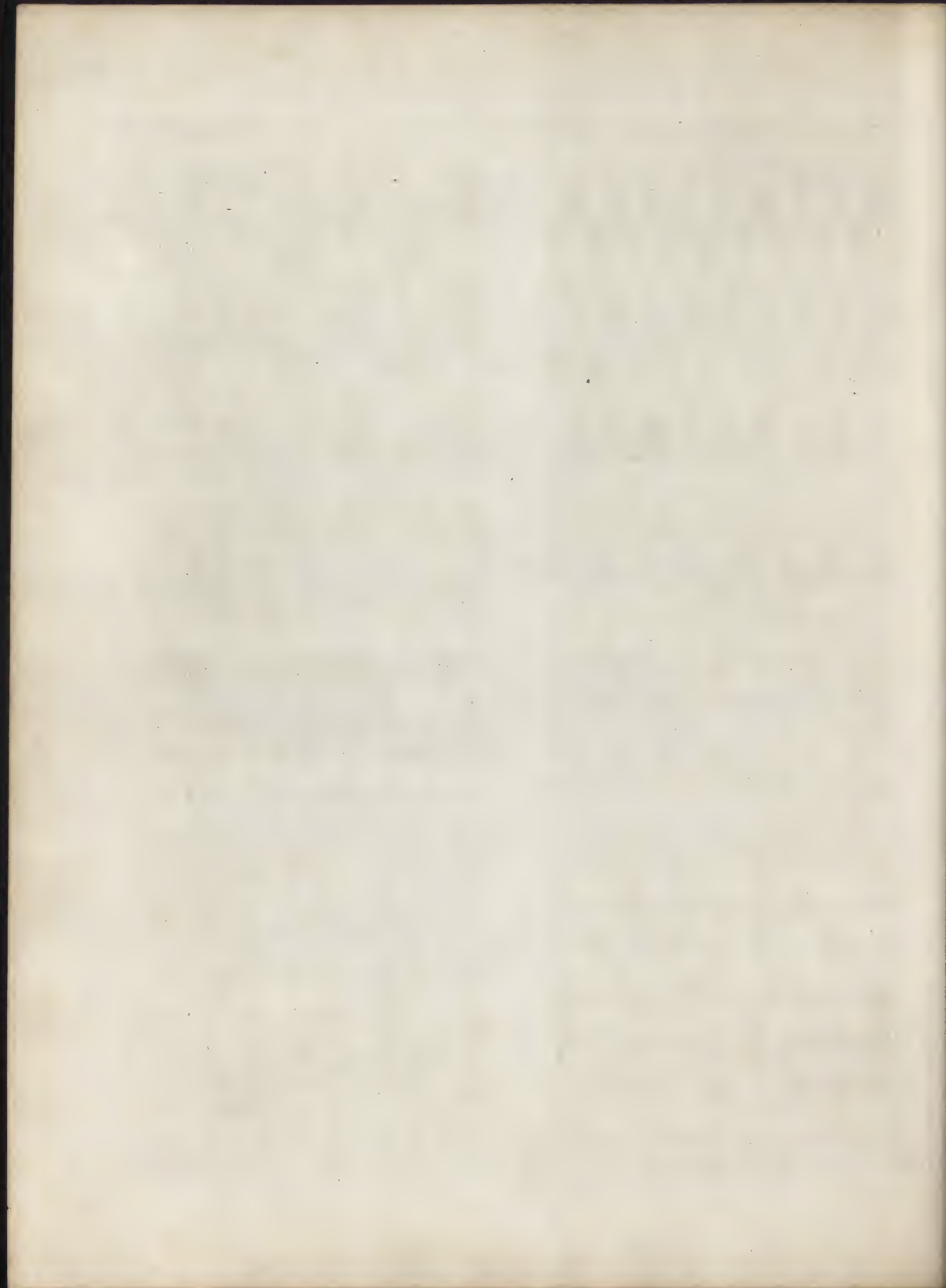
*Regular Hexagons, and Rhombus*



*Irregular Octagons, with oblong Hexagons & Squares*





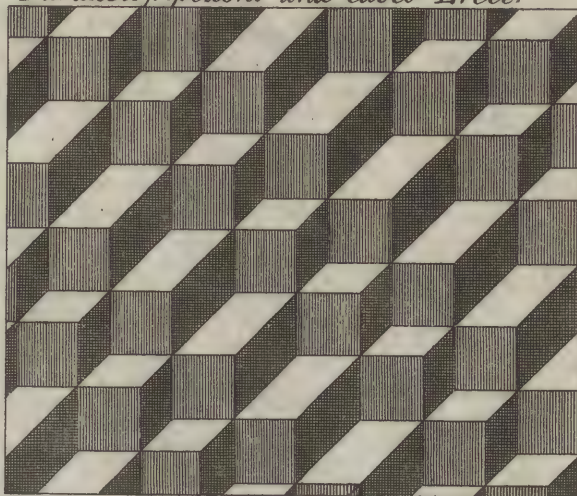




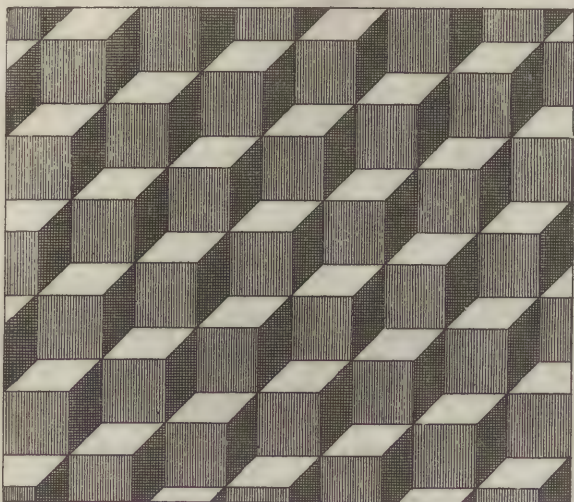
*Herring Bone*



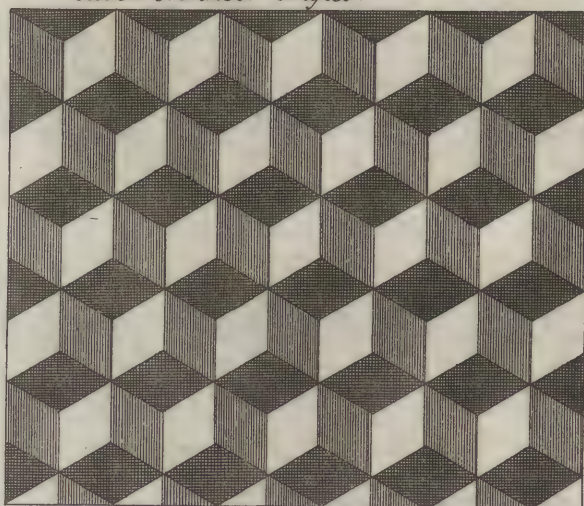
*Parallelopipedons and Cubes Erect.*



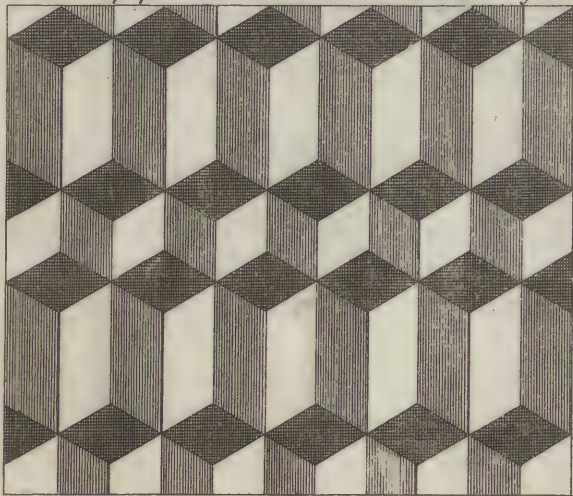
*Cubes Erect.*



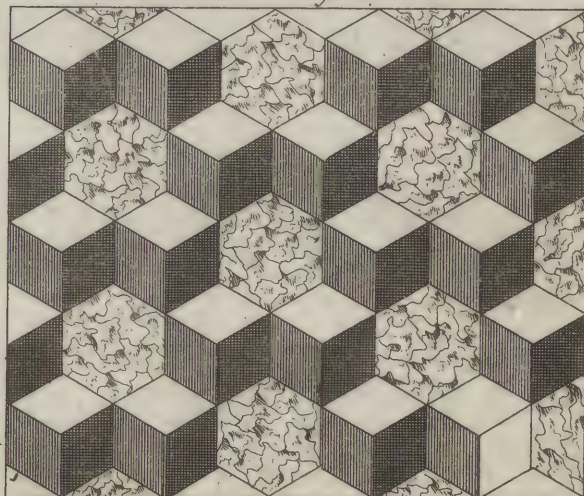
*Cubes on their angles.*



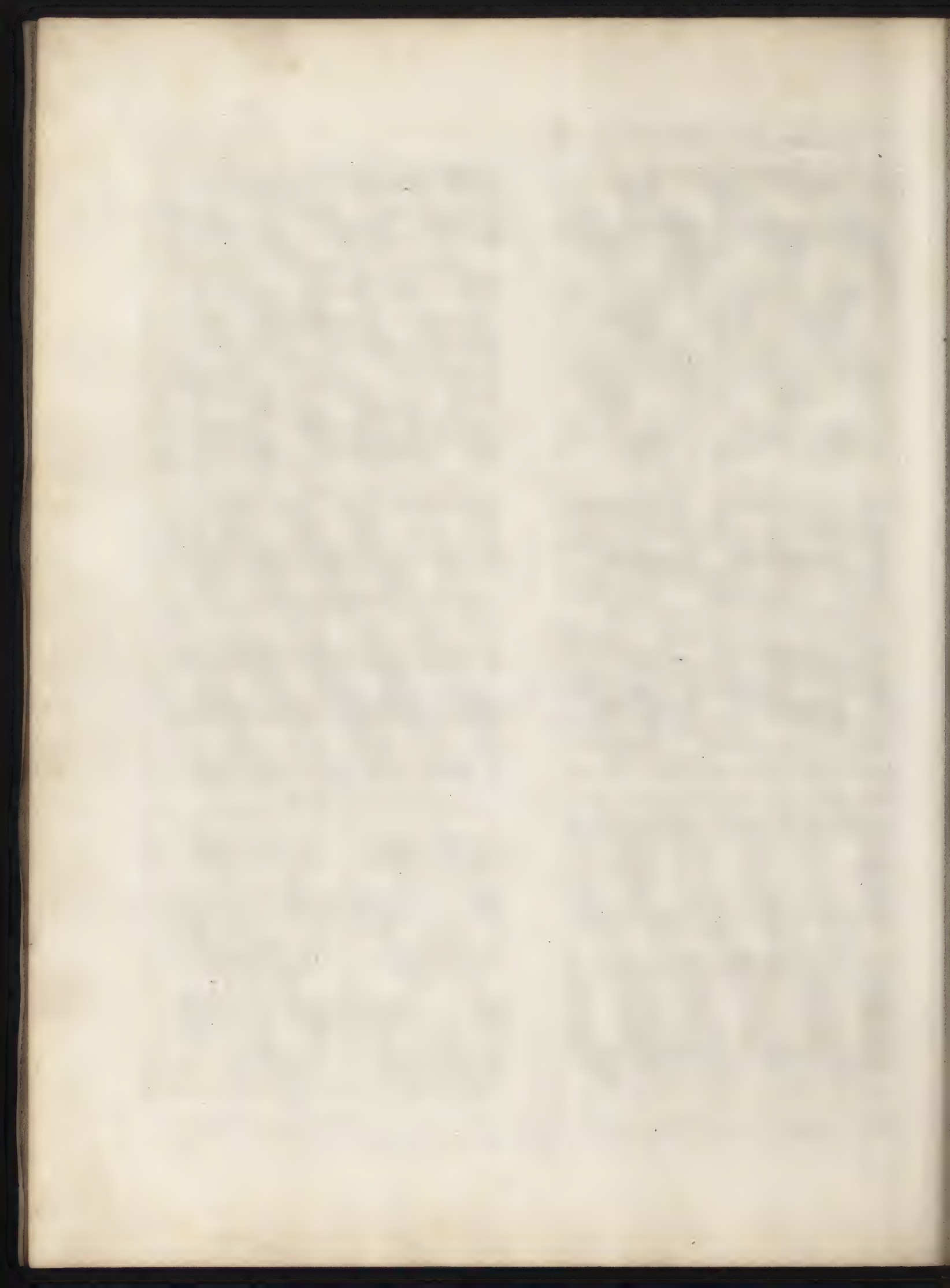
*Parallelopipedons and Cubes on their angles.*

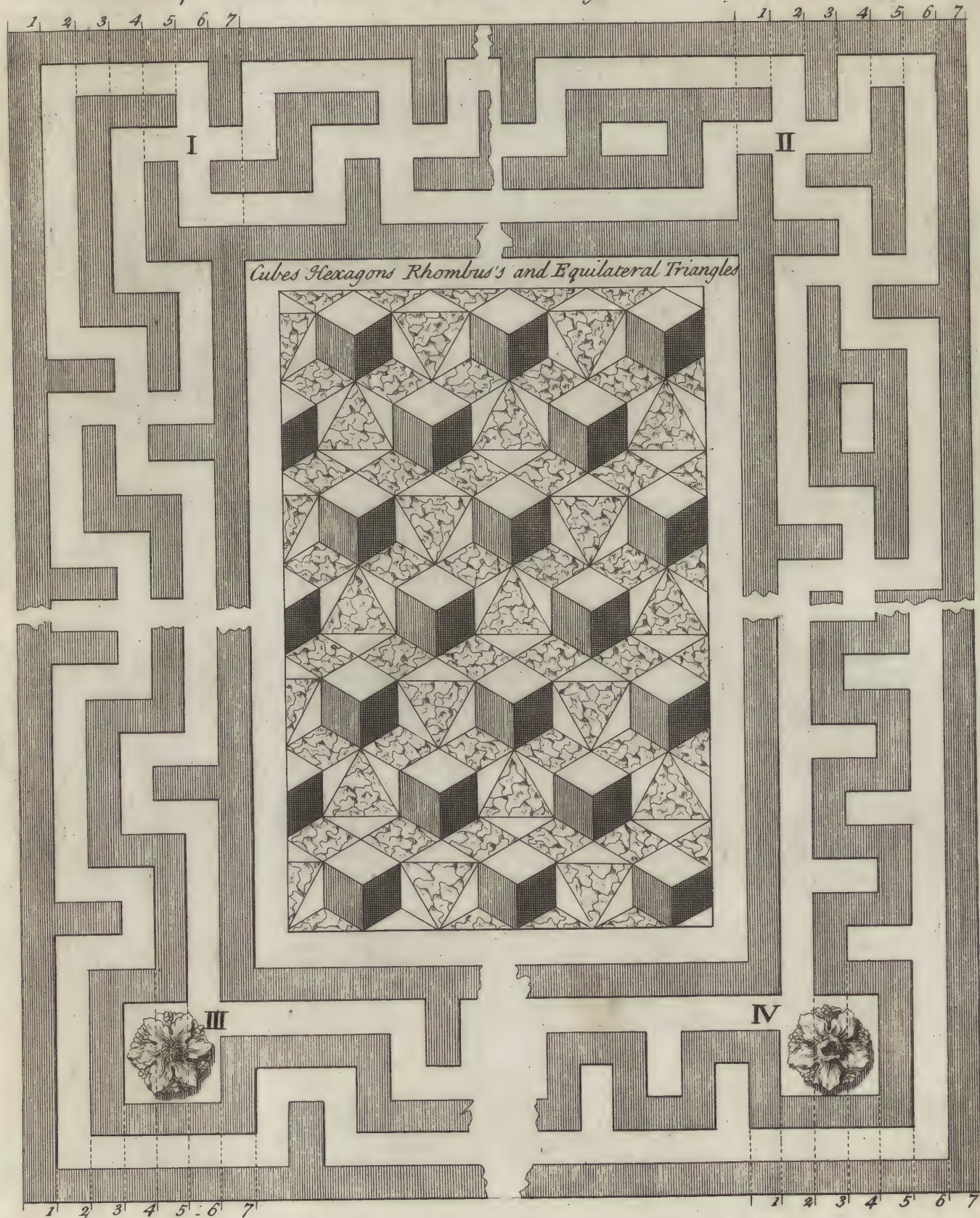


*Cubes and Hexagons.*













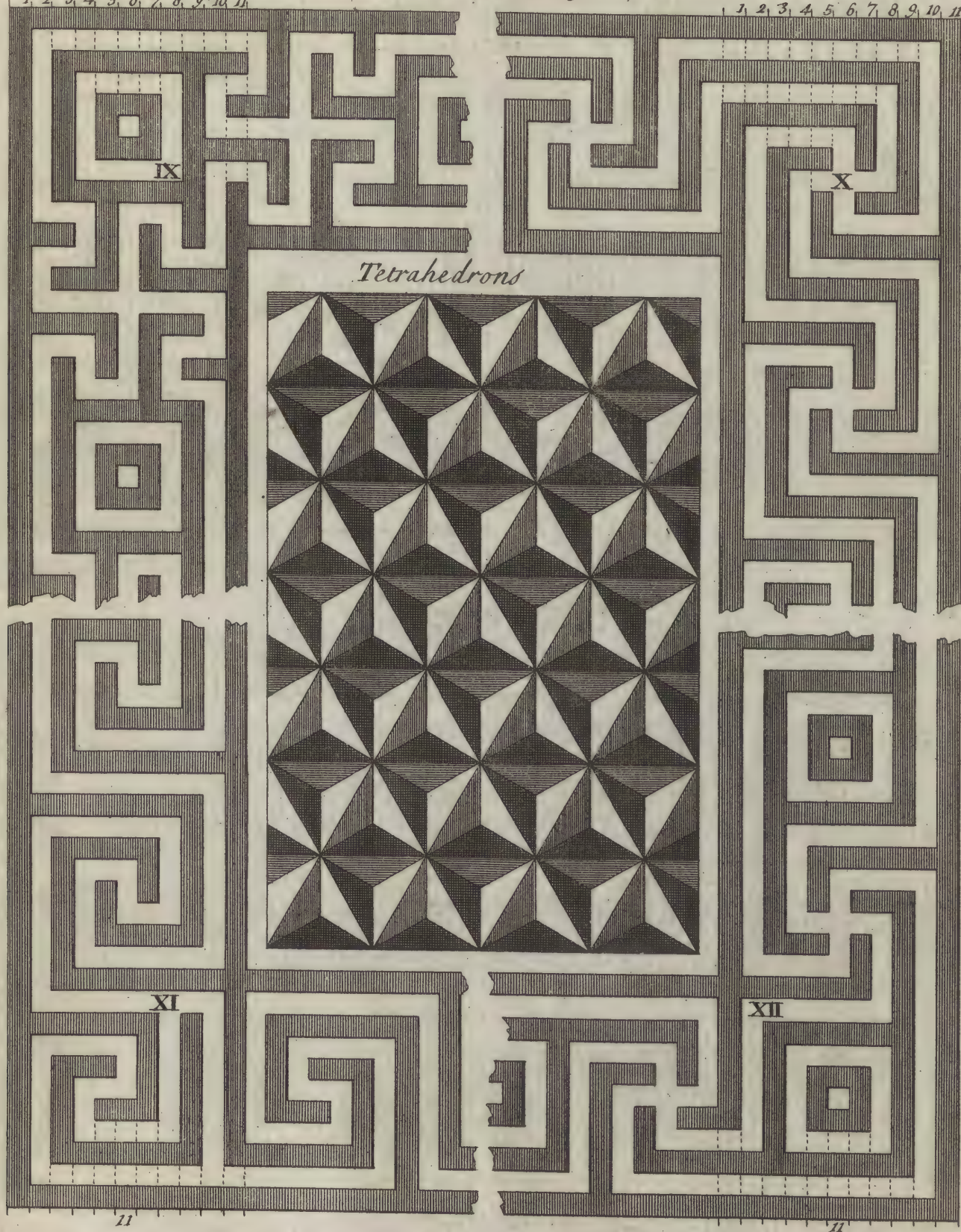






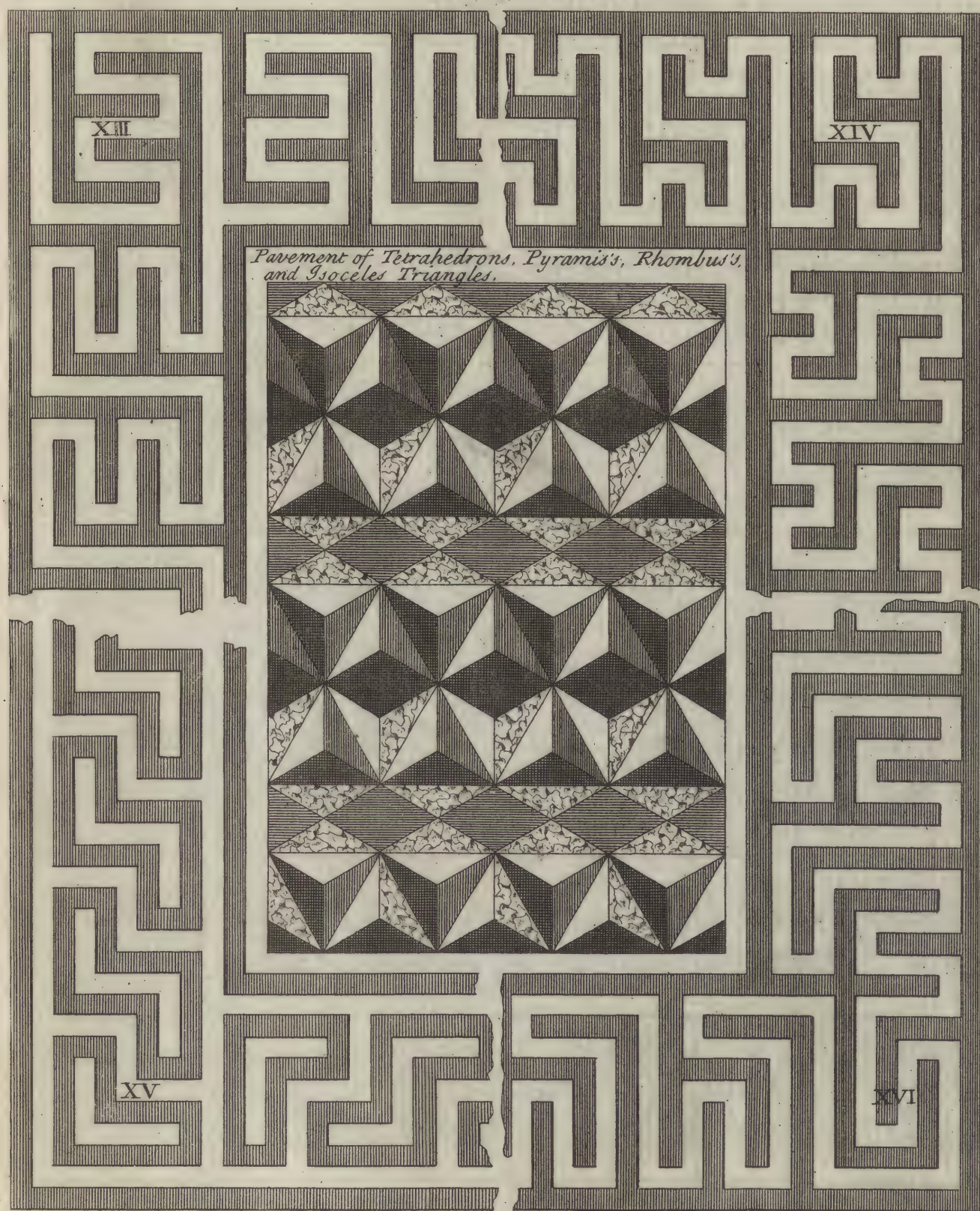
1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11

1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11









*Pavement of Tetrahedrons, Pyramids, Rhombus's,  
and Isocles Triangles.*





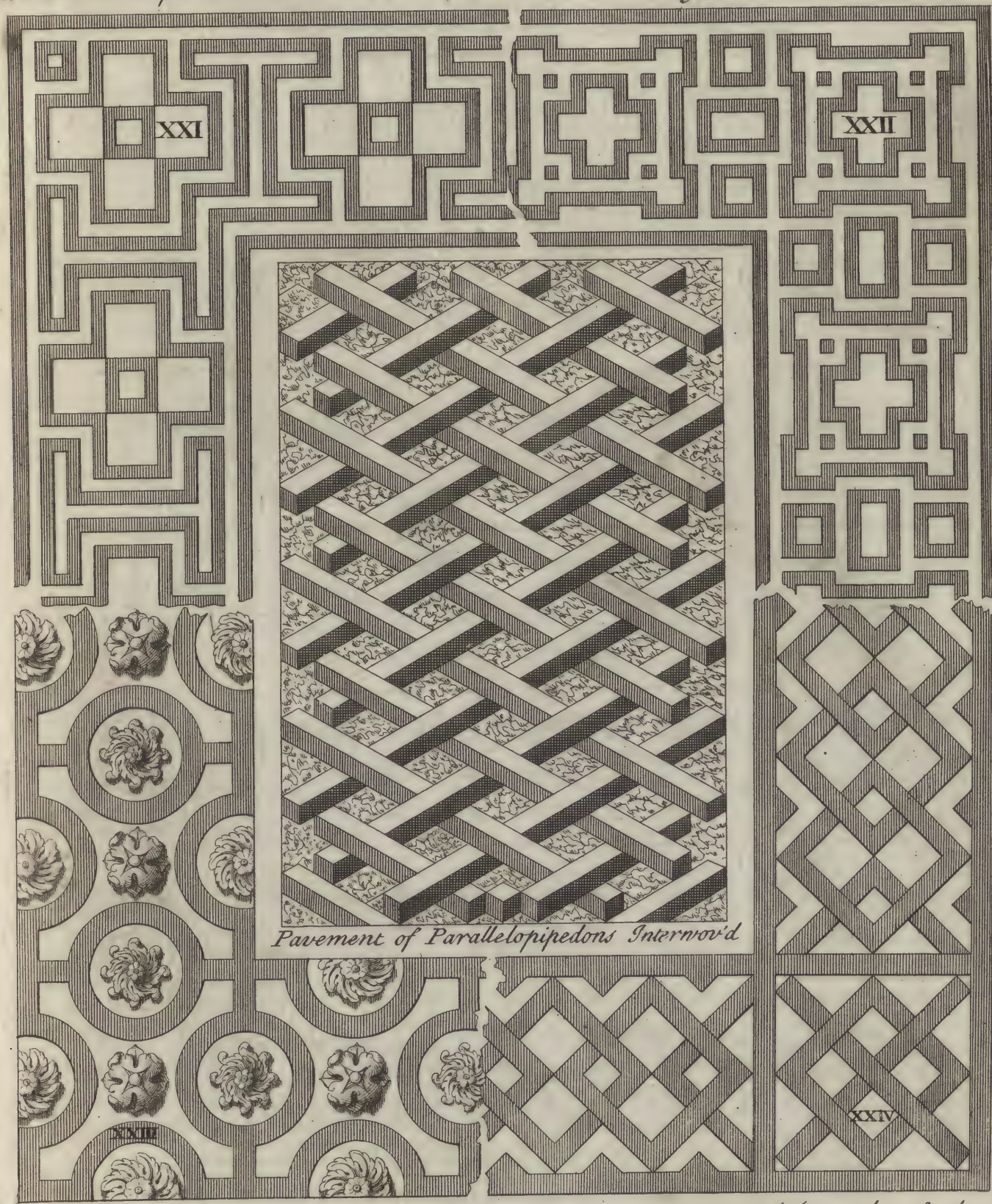






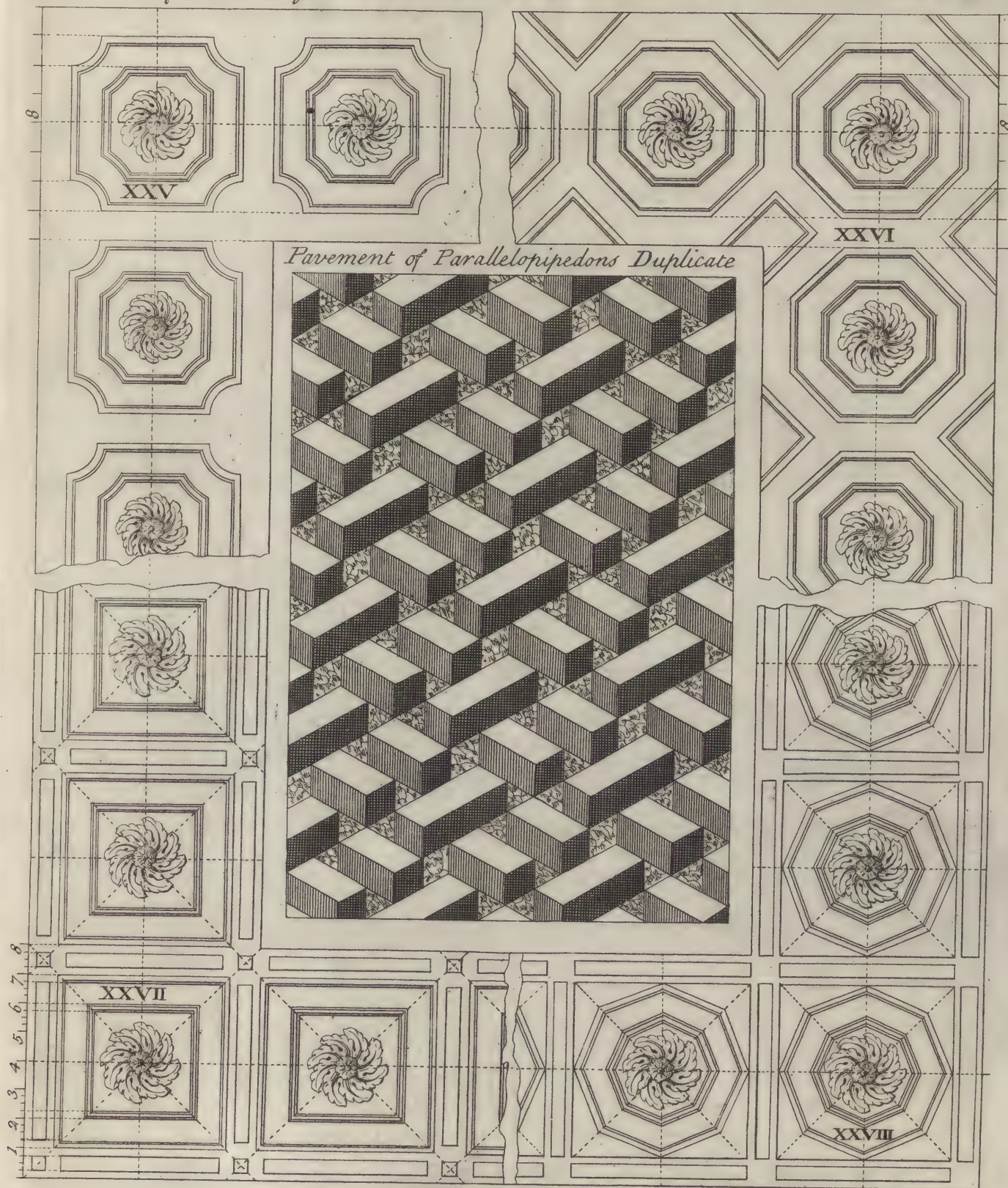












Batty Langley Invent and Delin. 1739.

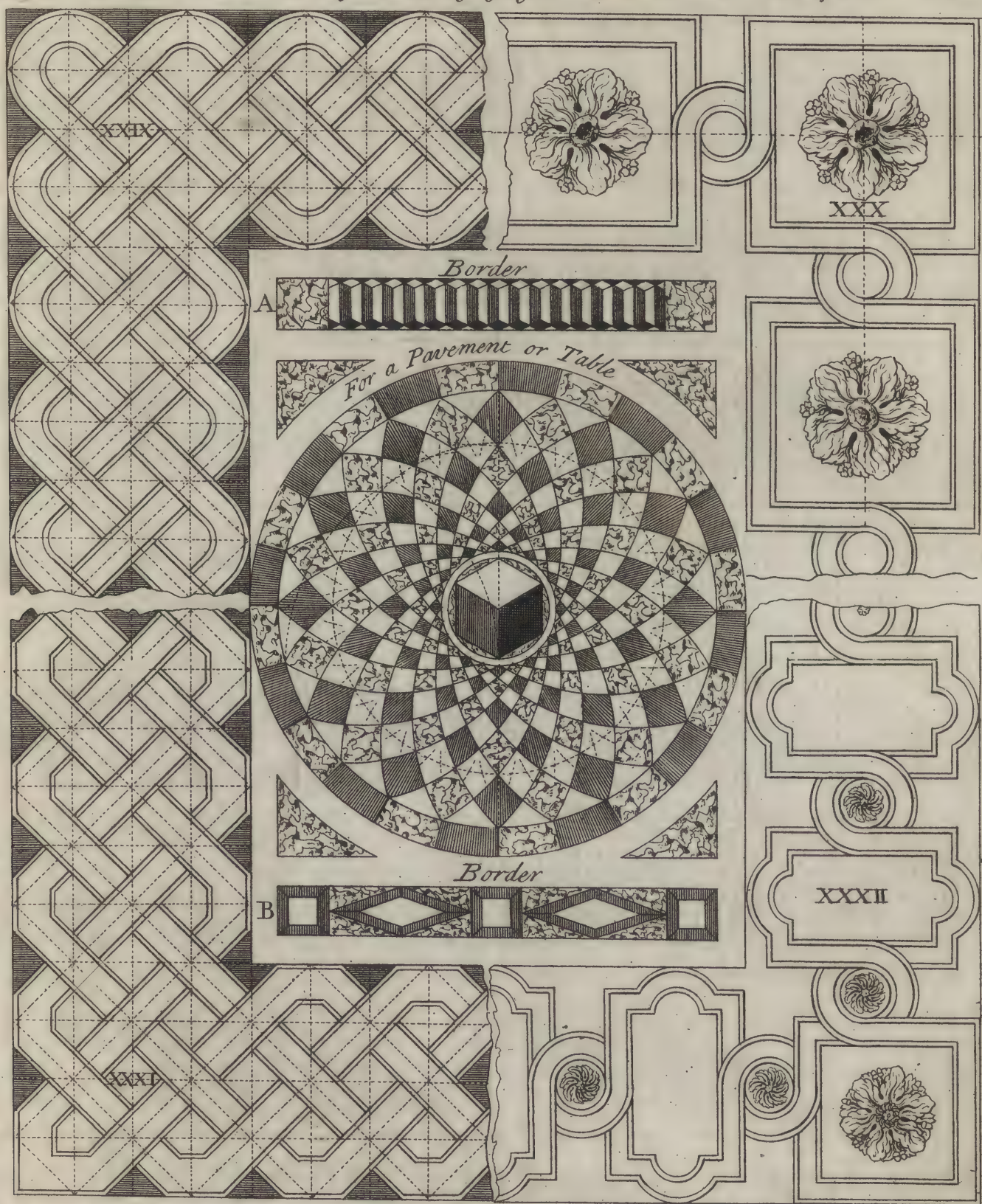
Tho. Langley Sculp.







Guilochis for decorating, Looking Glass and Picture Frames &c. Plate CIV.



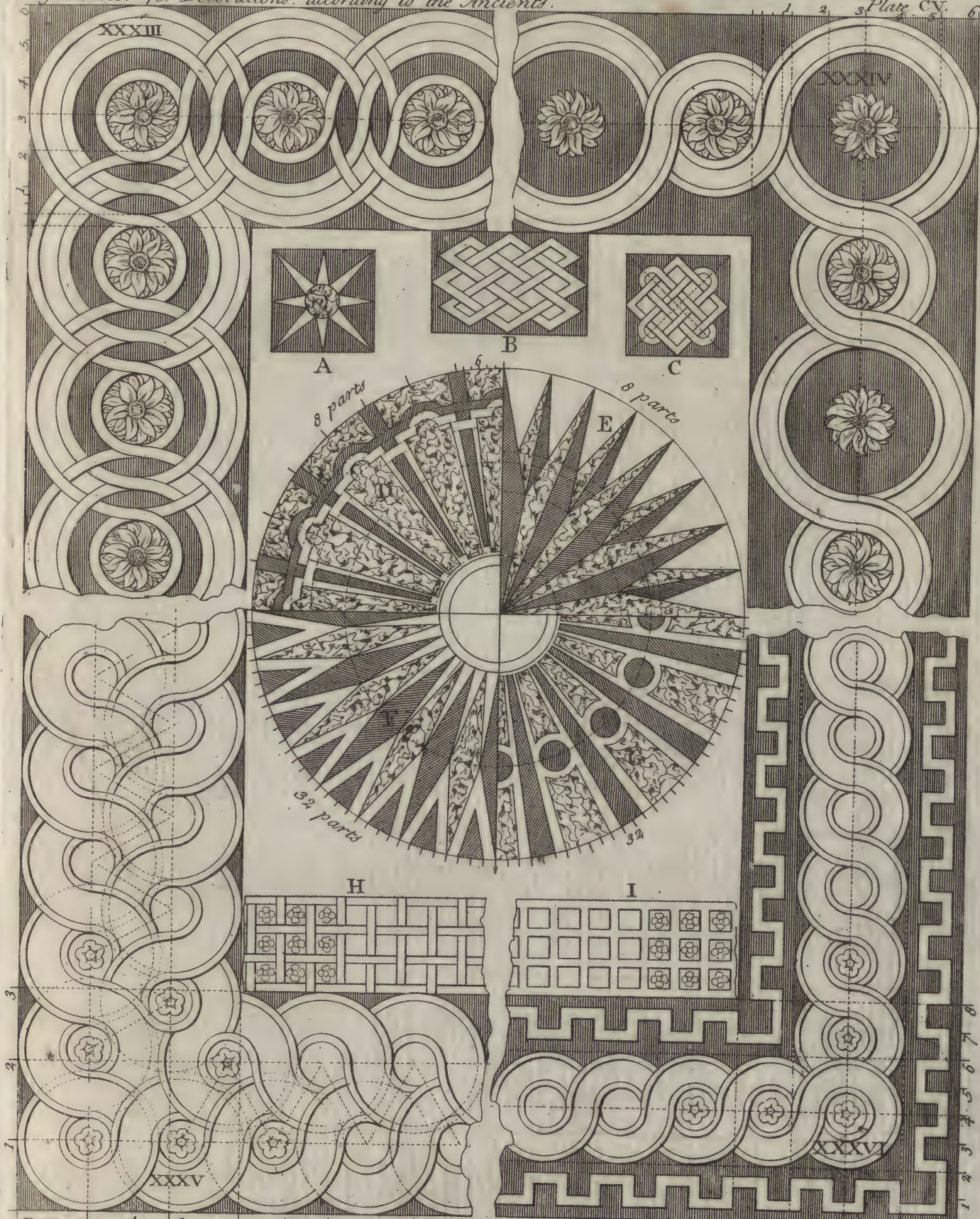
Batty Langley Invent and Delin. 1739.

Tho<sup>s</sup>. Langley Sculp.









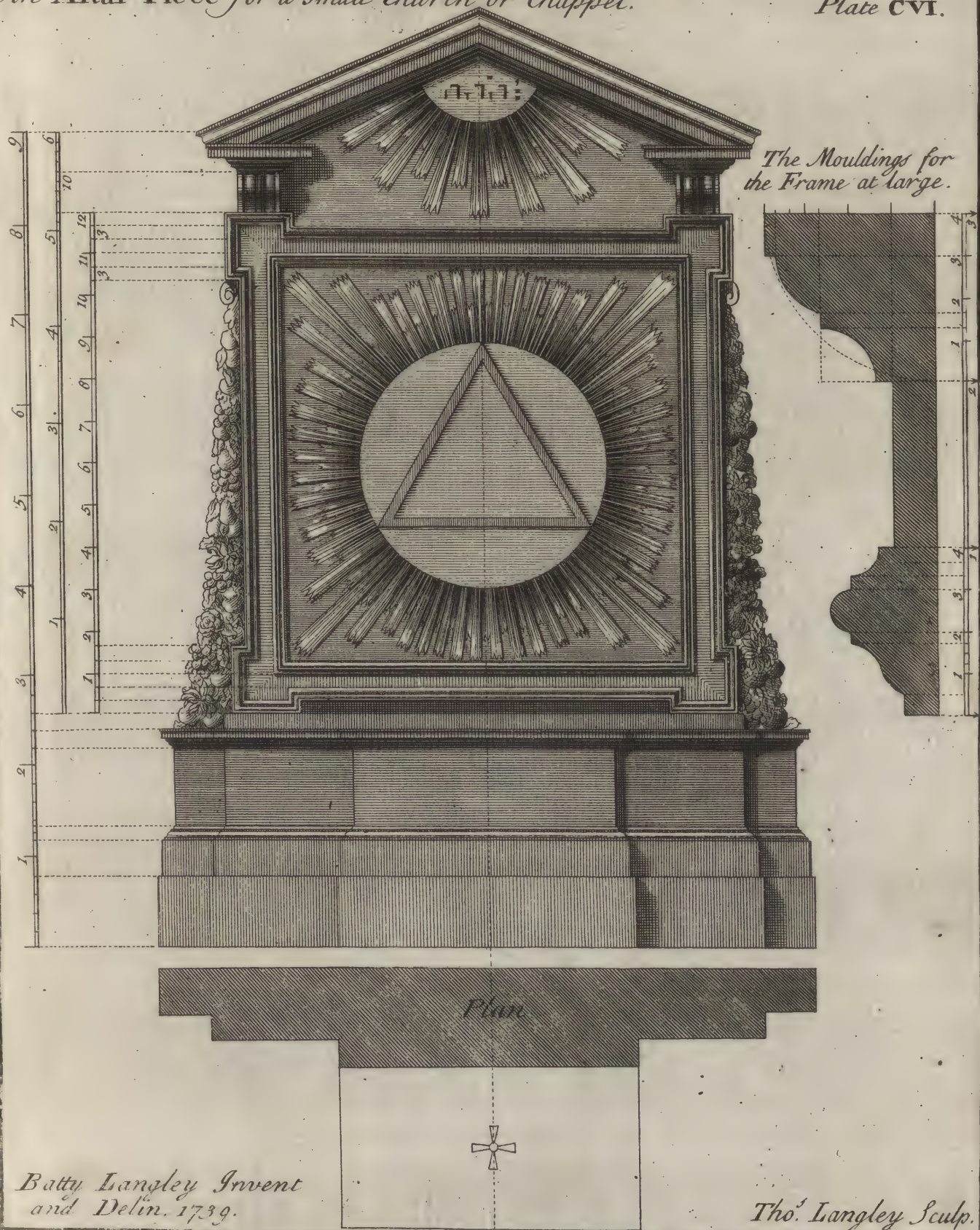






*An Altar Piece for a small Church or Chappel.*

*Plate CVI.*



*Batty Langley Invent  
and Delin. 1739.*

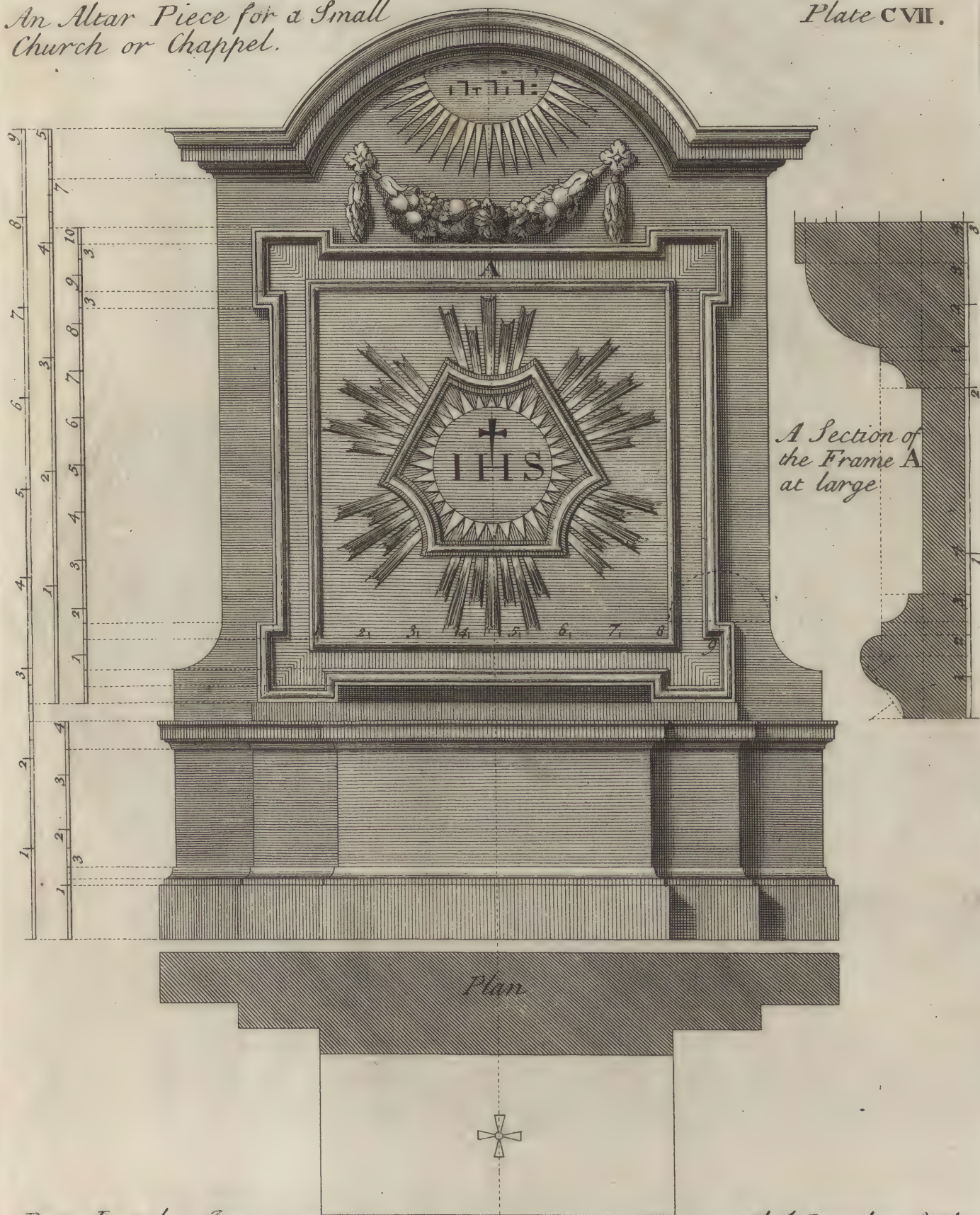
*Tho.<sup>s</sup> Langley Sculp.*





*An Altar Piece for a Small  
Church or Chappel.*

*Plate CVII.*



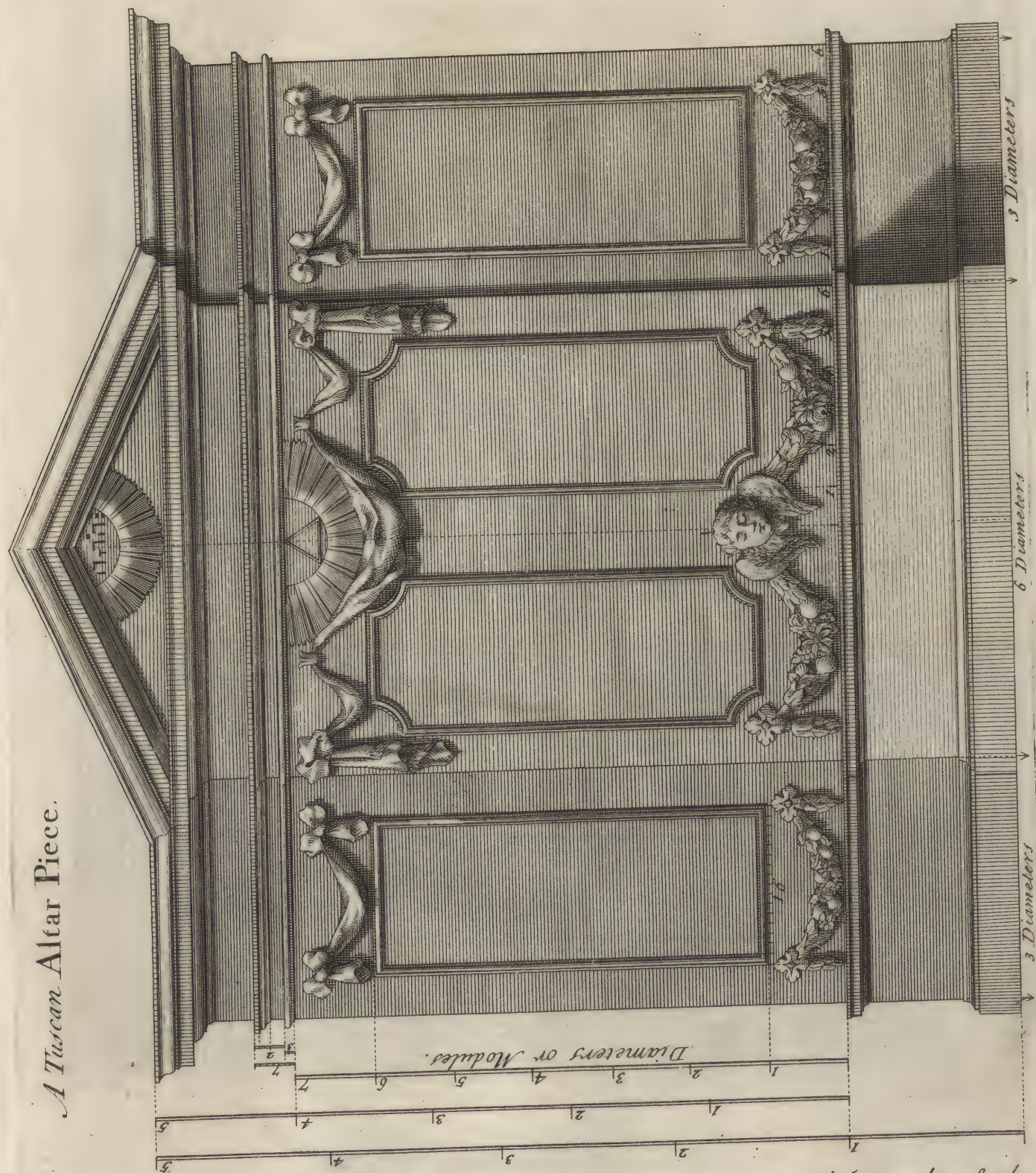
*Batty Langley Invent and Delin. 1739.*

*Tho. Langley Sculp.*





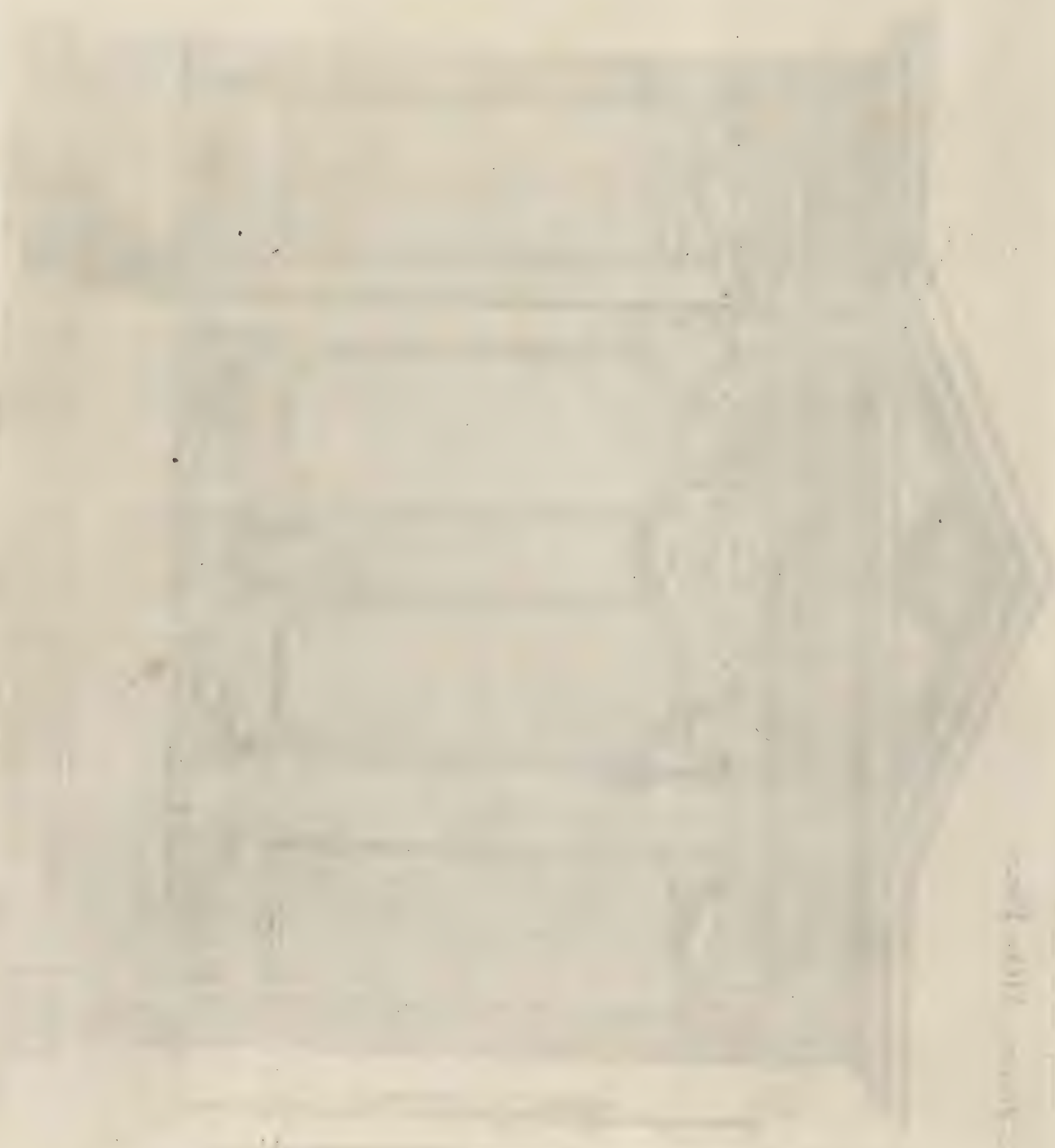
A Tuscan Altar Piece.



Batty Langley Invent and Delin. 1739.

Tho: Langley Sculp.

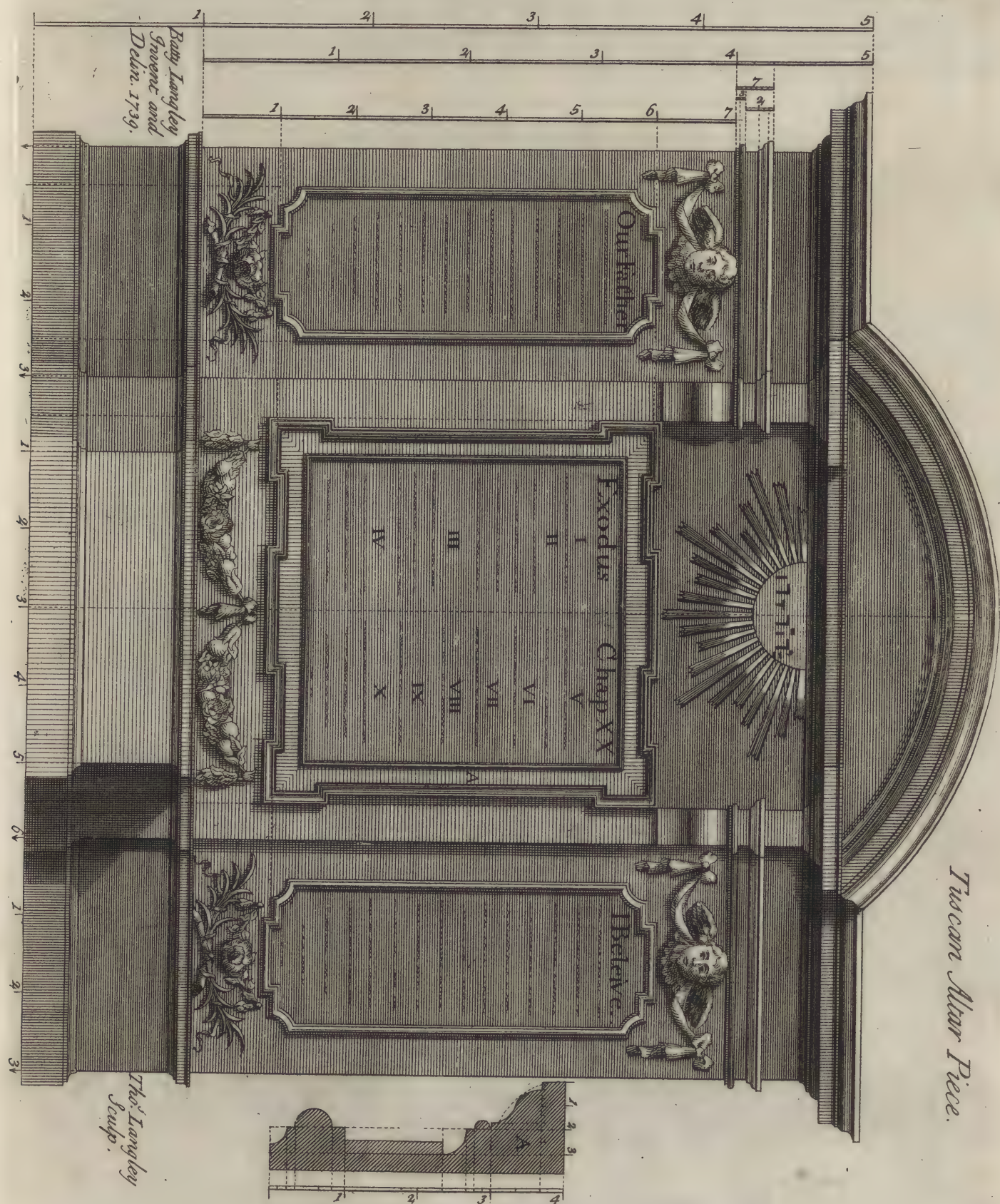




Architectural drawing



*Tuscan Altar Piece.*

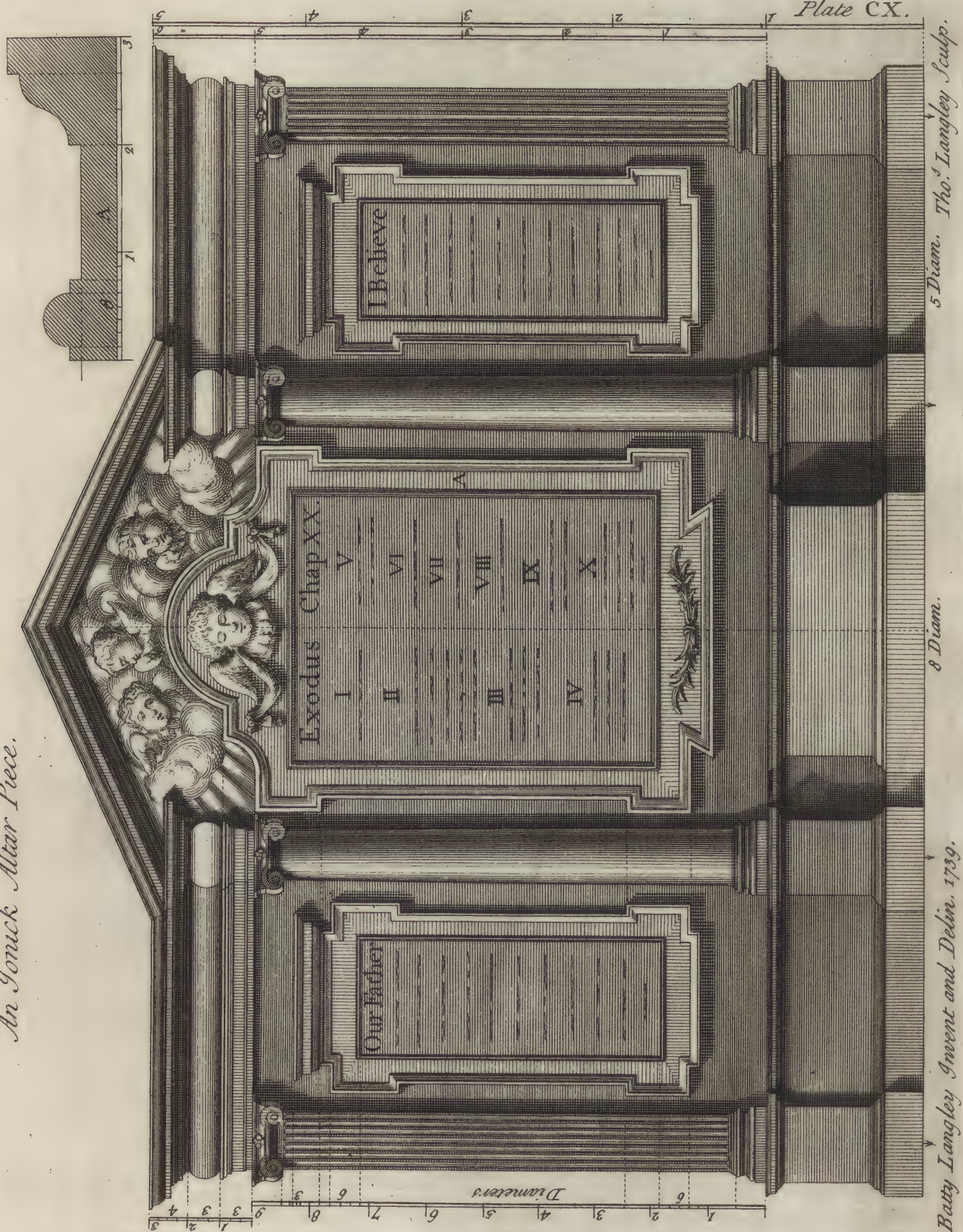






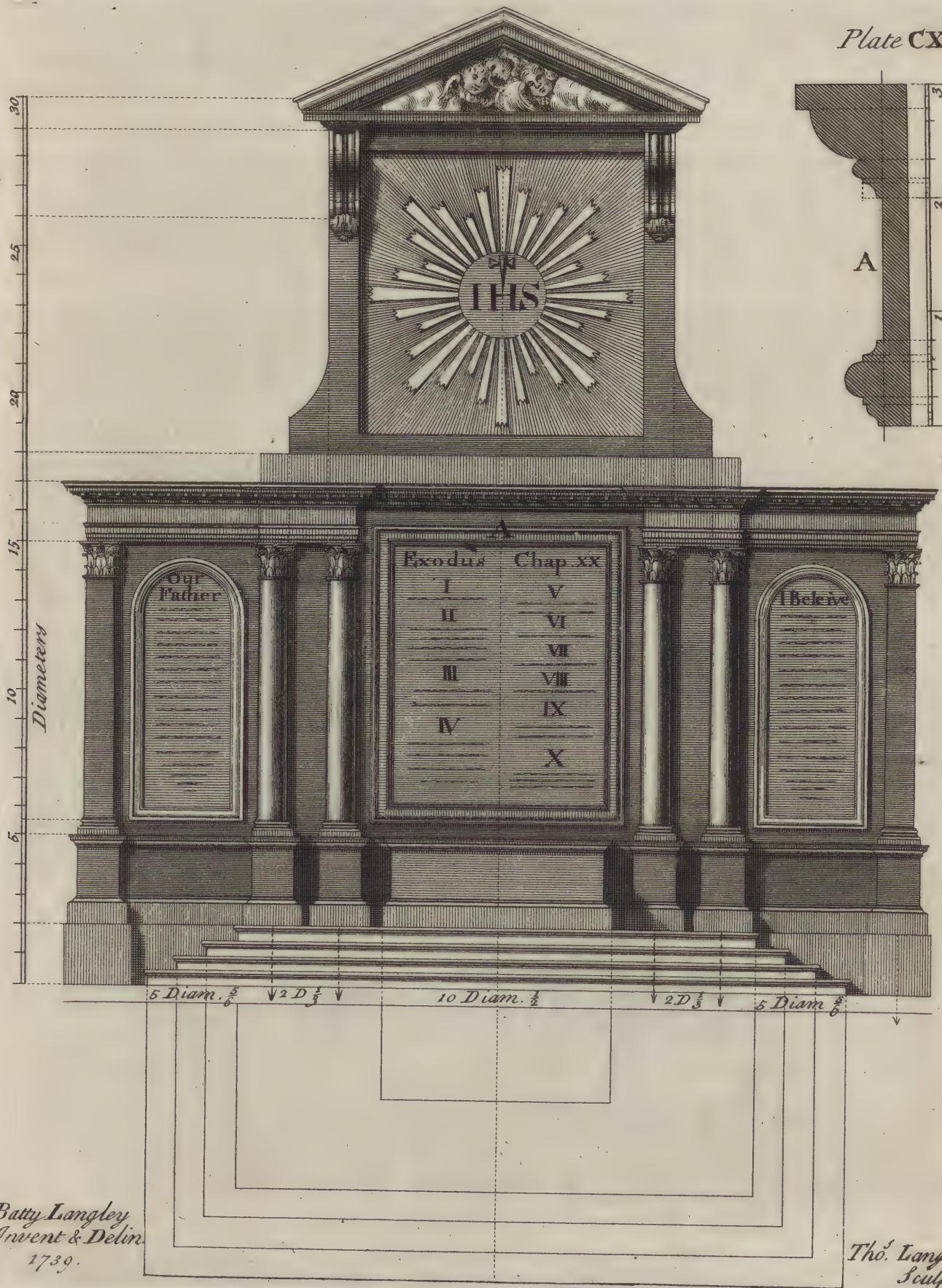


An Ionick Altar Piece.









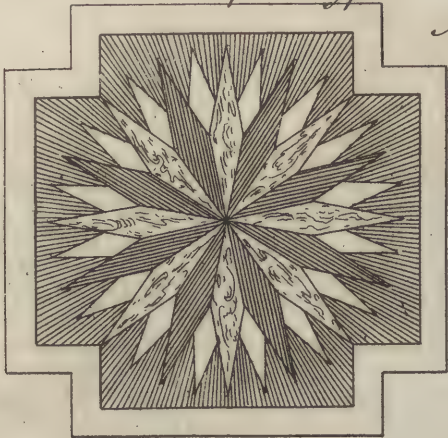
Batty Langley  
Invent & Delin.  
1739.

Tho. Langley  
Sculp.

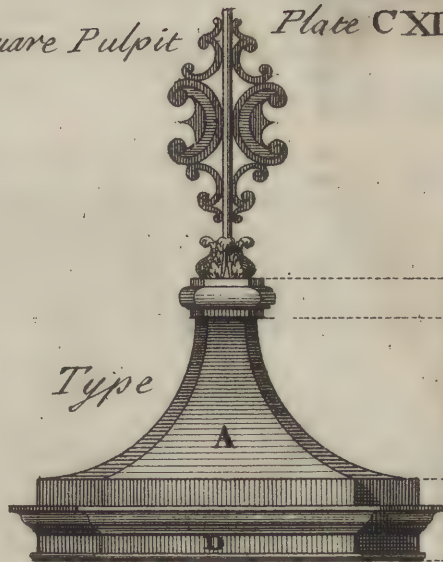




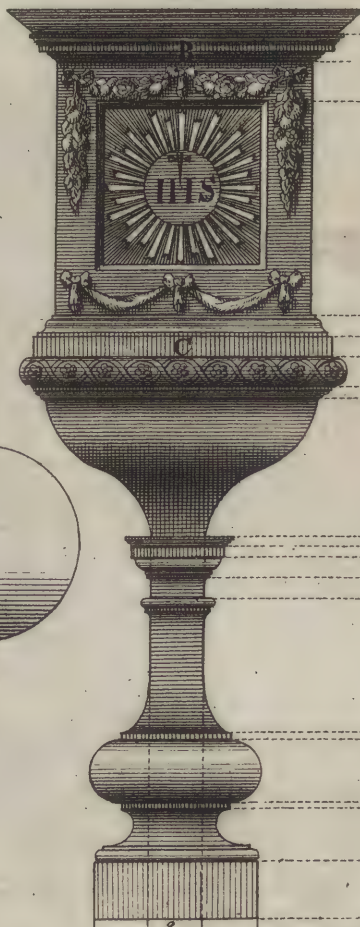
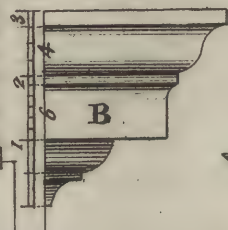
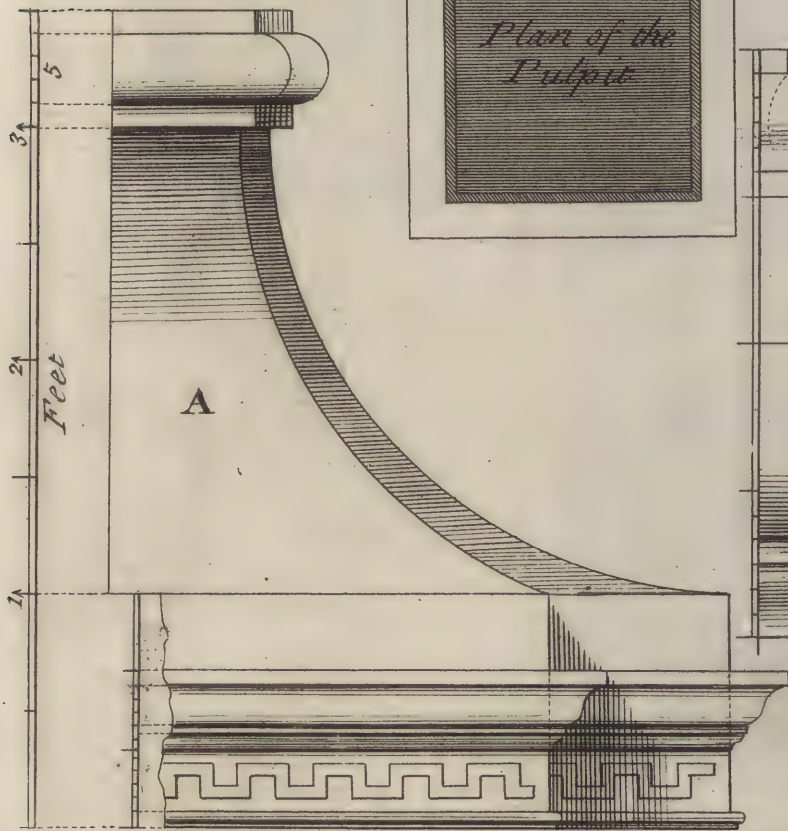
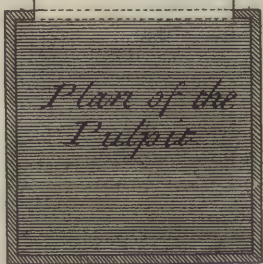
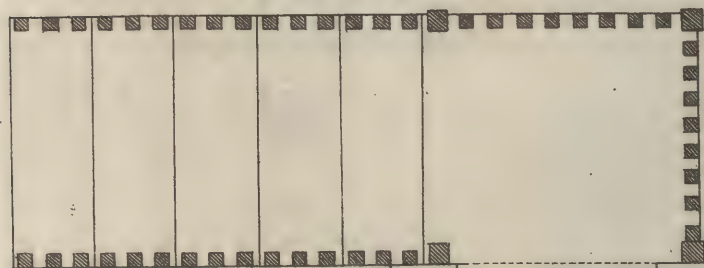
*The Planceor of the Type*



*A Geometrical Square Pulpit* Plate CXII.



*Type*



*Tho<sup>d</sup>. Langley Sculp.*

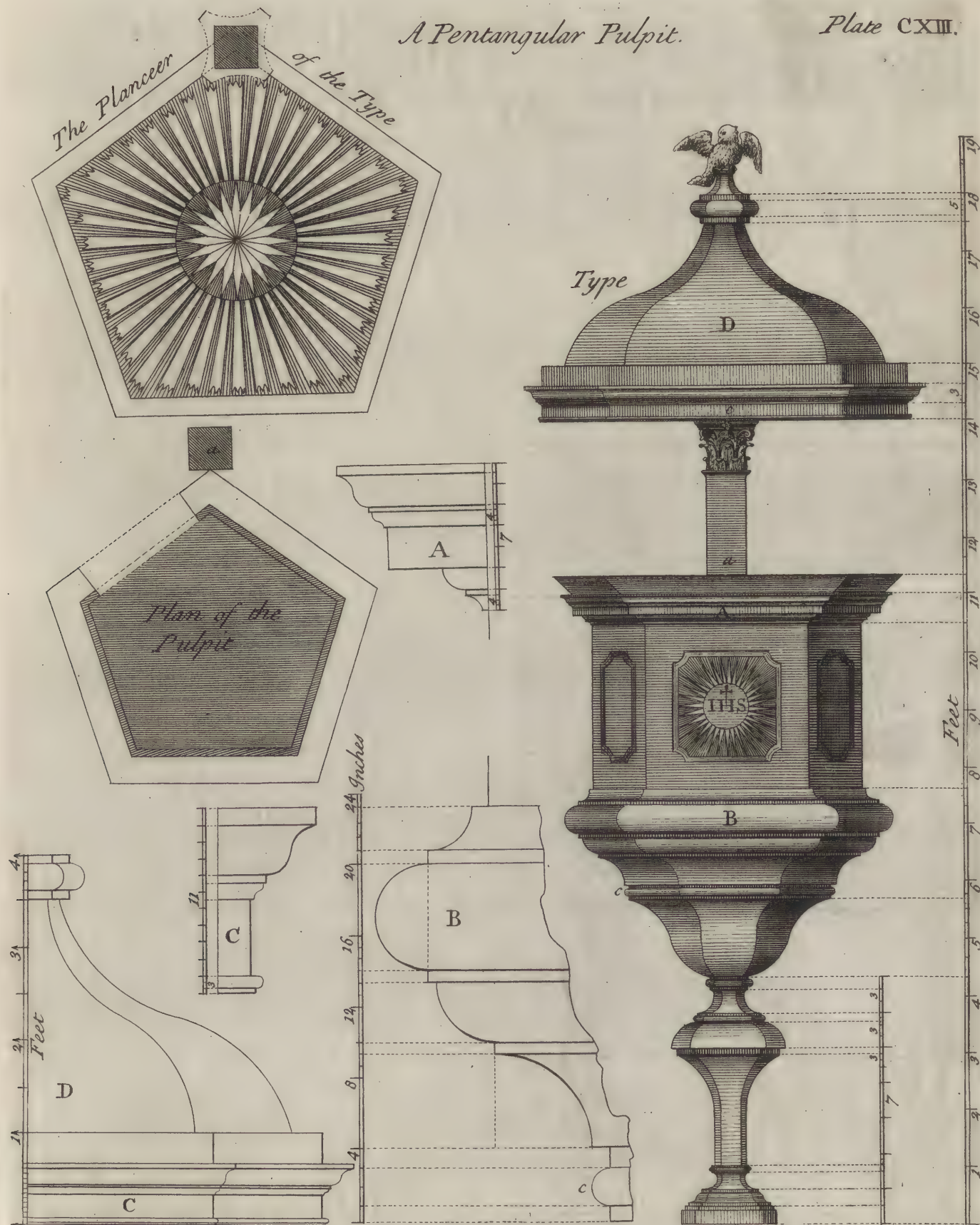
*Batty Langley Invent and Delin. 1739.*





*A Pentangular Pulpit.*

*Plate CXIII.*



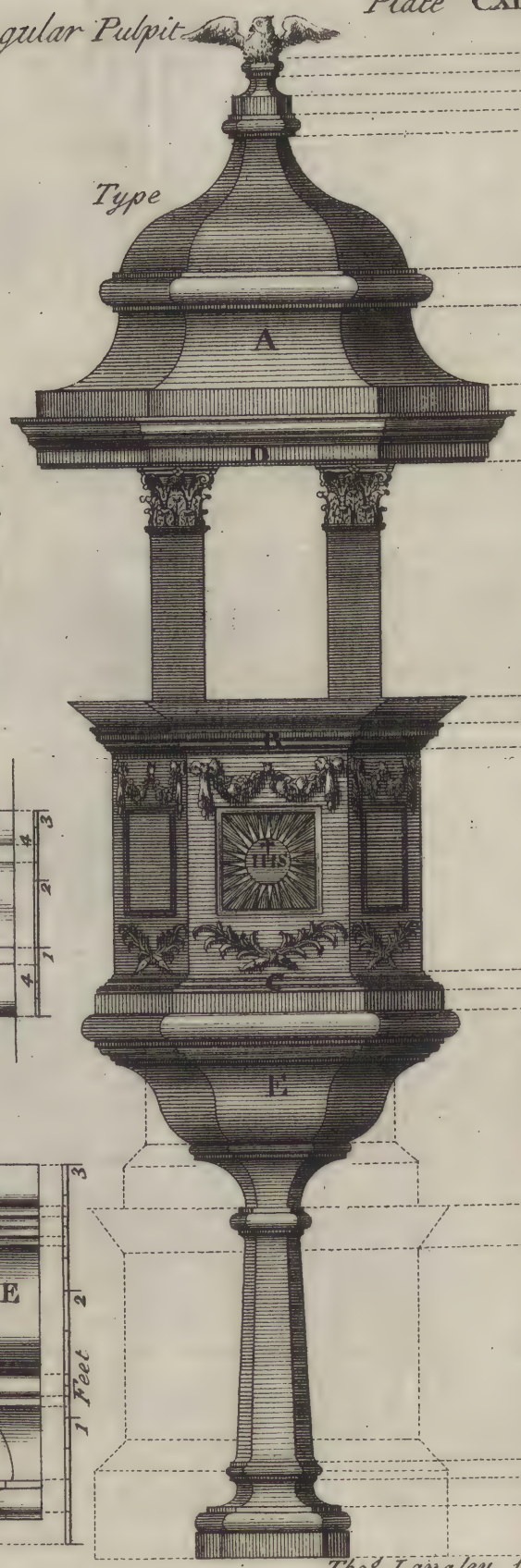
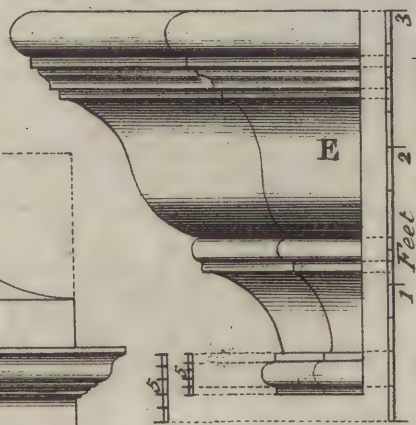
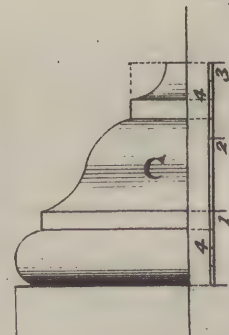
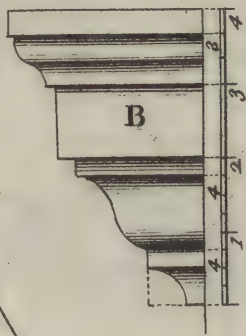
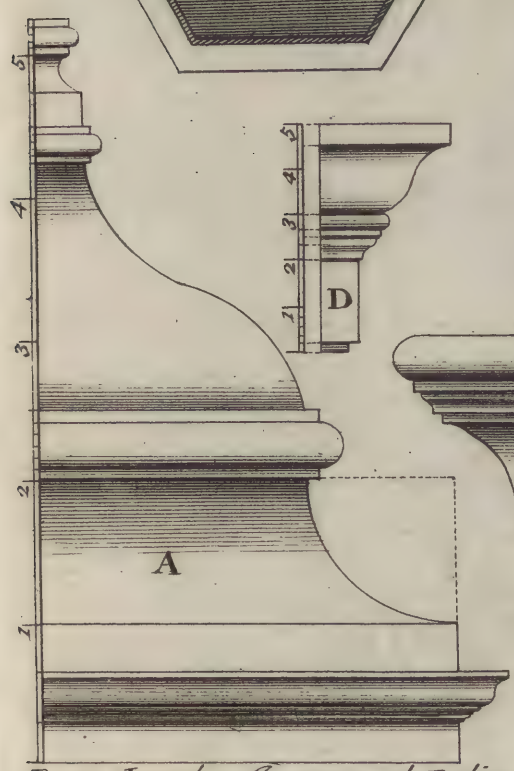
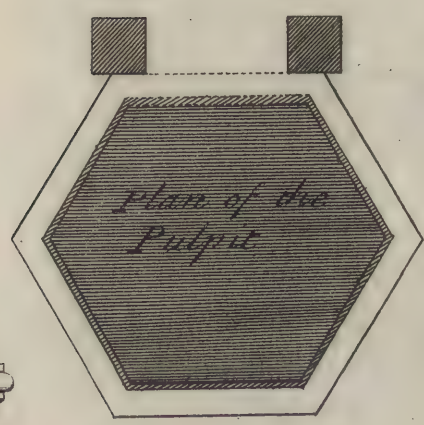
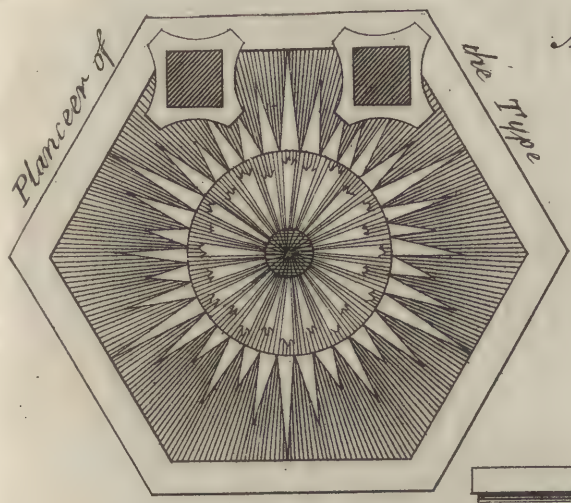
*Batty Langley Invent and Delin. 1739.*

*Tho: Langley Sculp.*





A Hexangular Pulpit

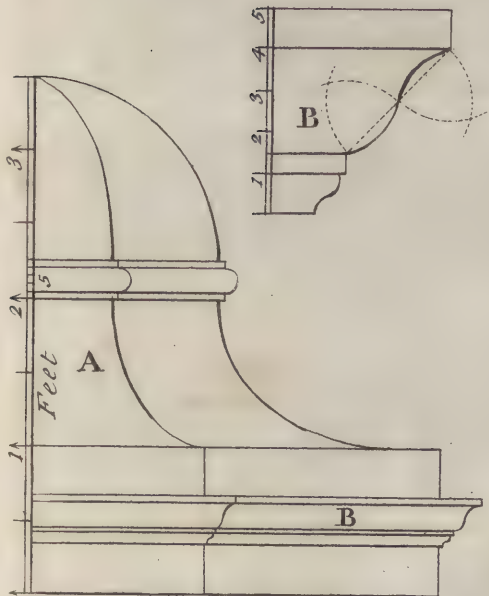
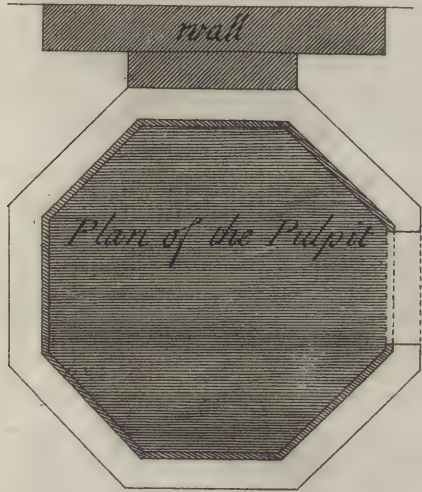
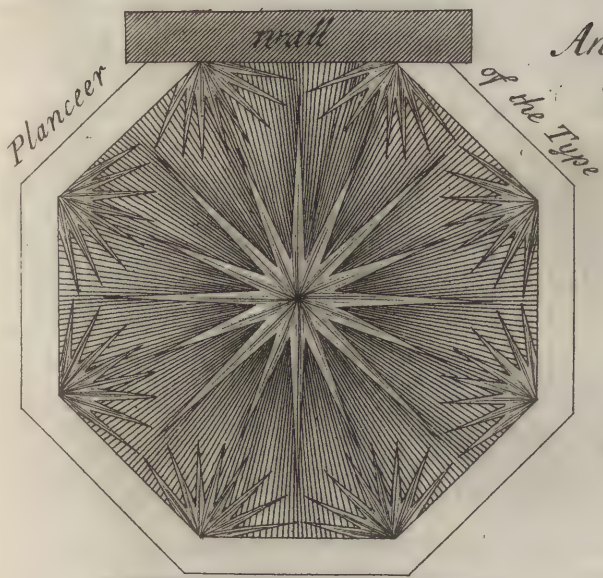


Batty Langley Invent and Delin. 1739.

Tho.<sup>d</sup> Langley Sculp.



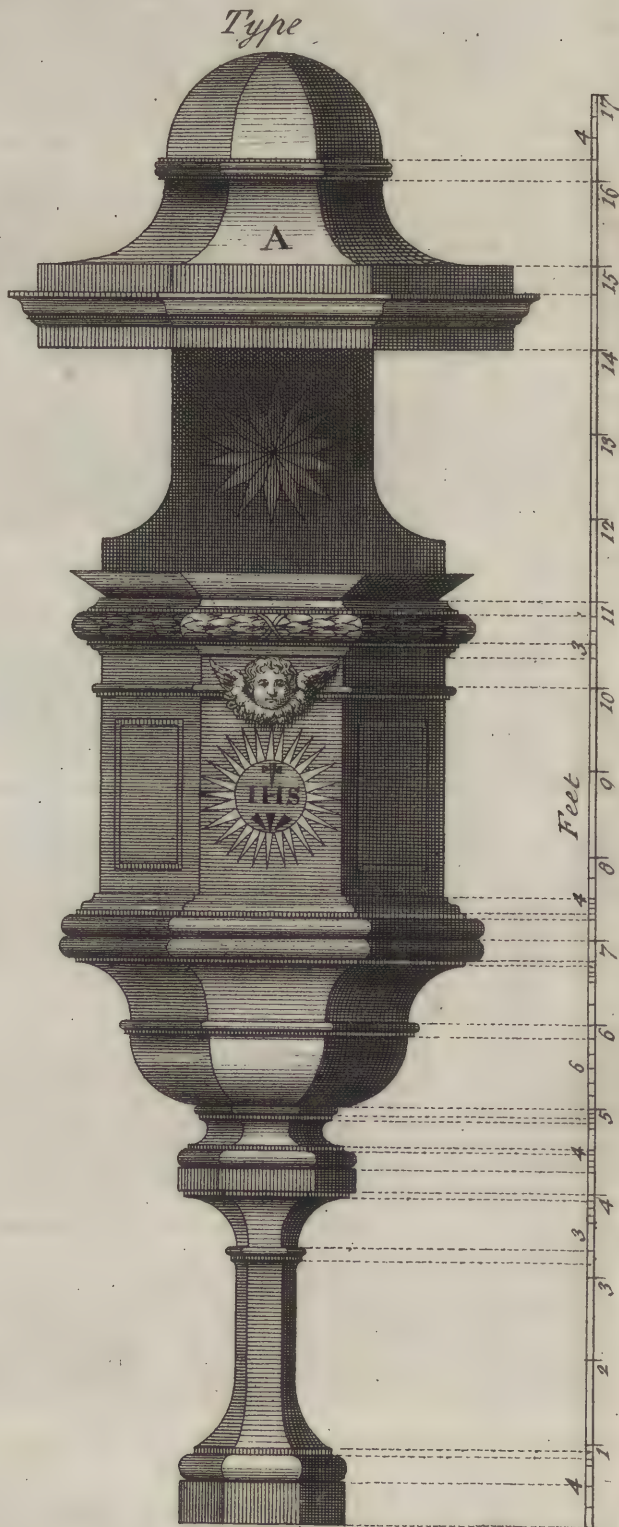




Batty Langley Invent and Delin. 1739.

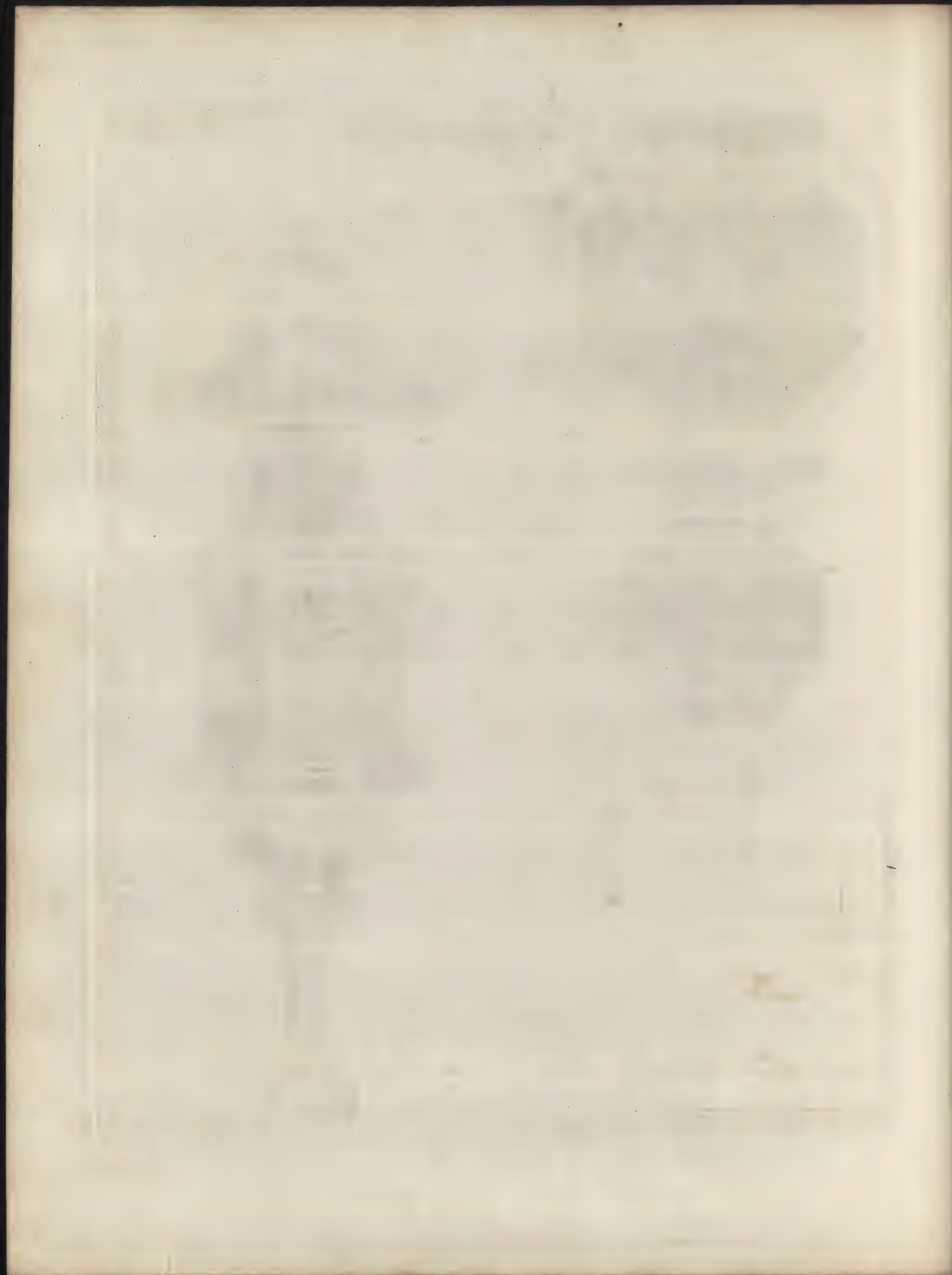
An Octangular Pulpit  
against a wall.

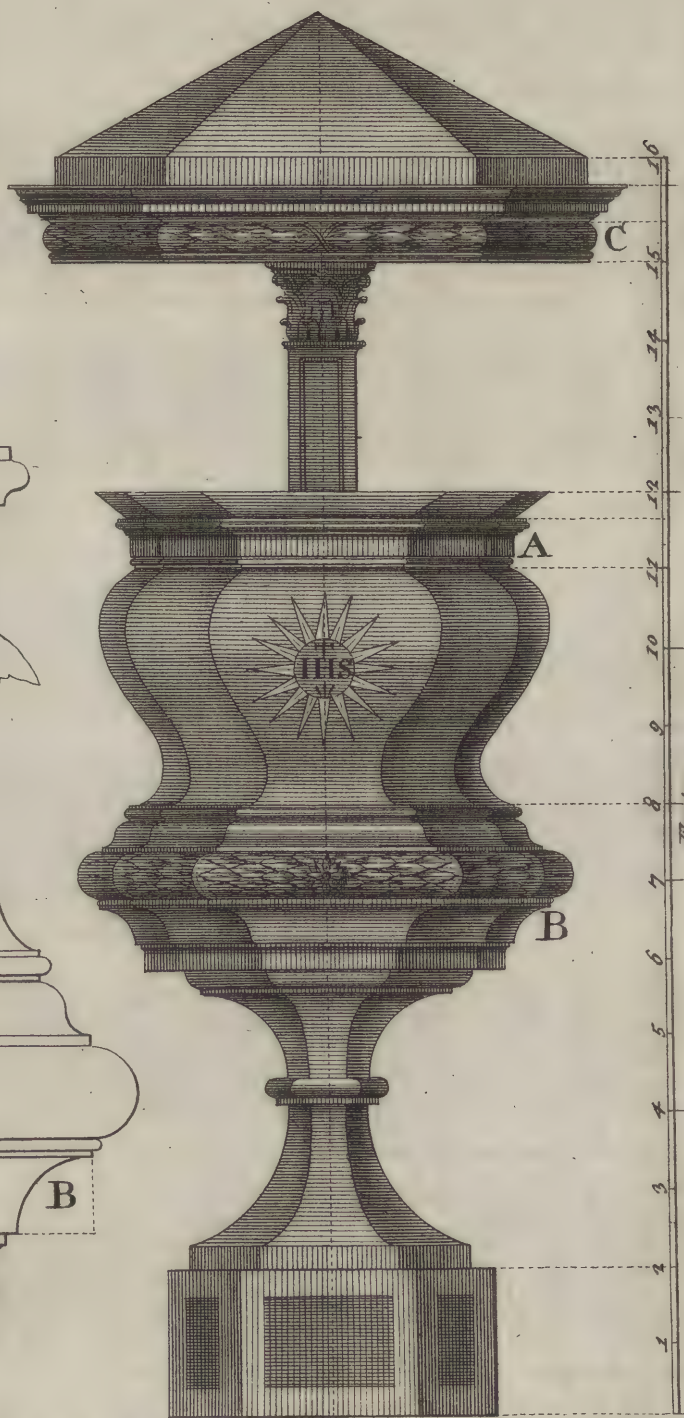
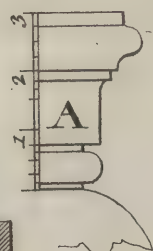
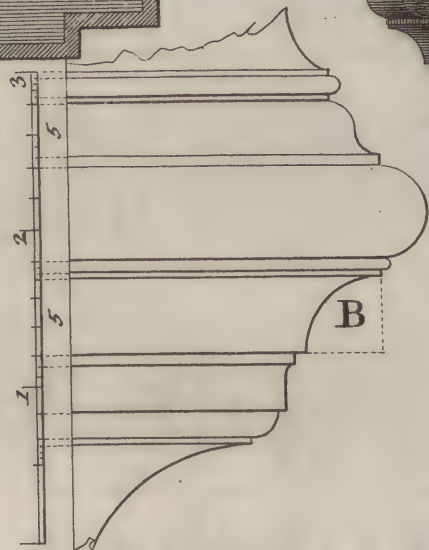
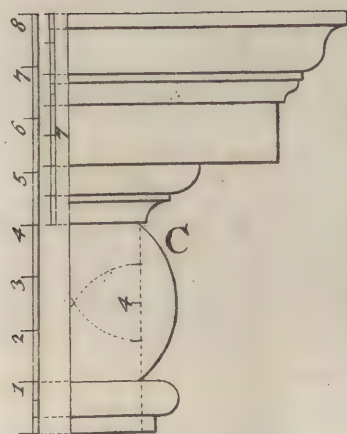
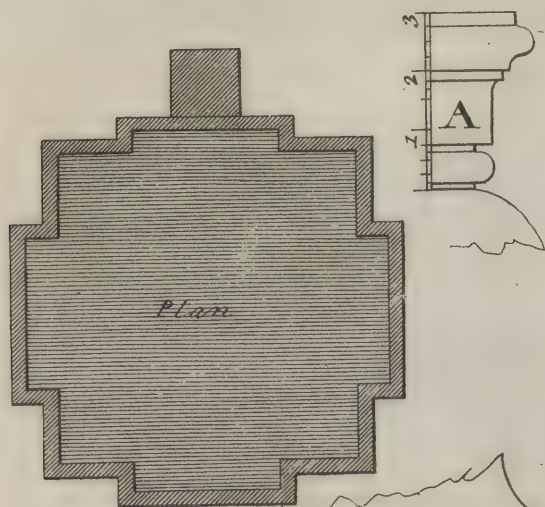
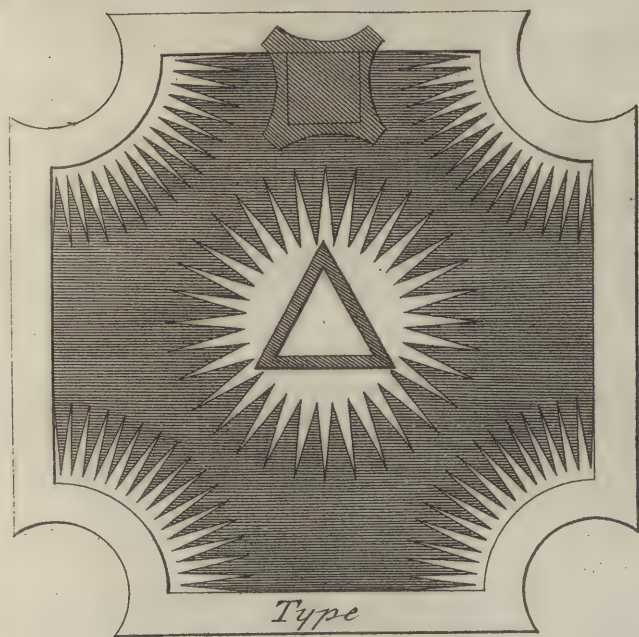
Plate CXV.



Tho: Langley Sculp.

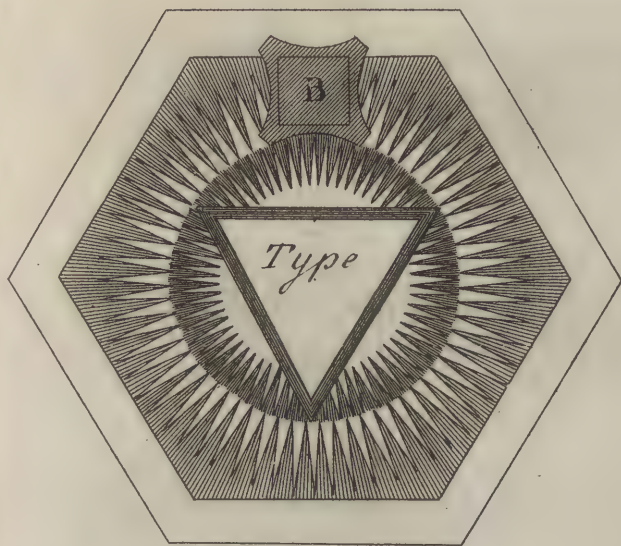




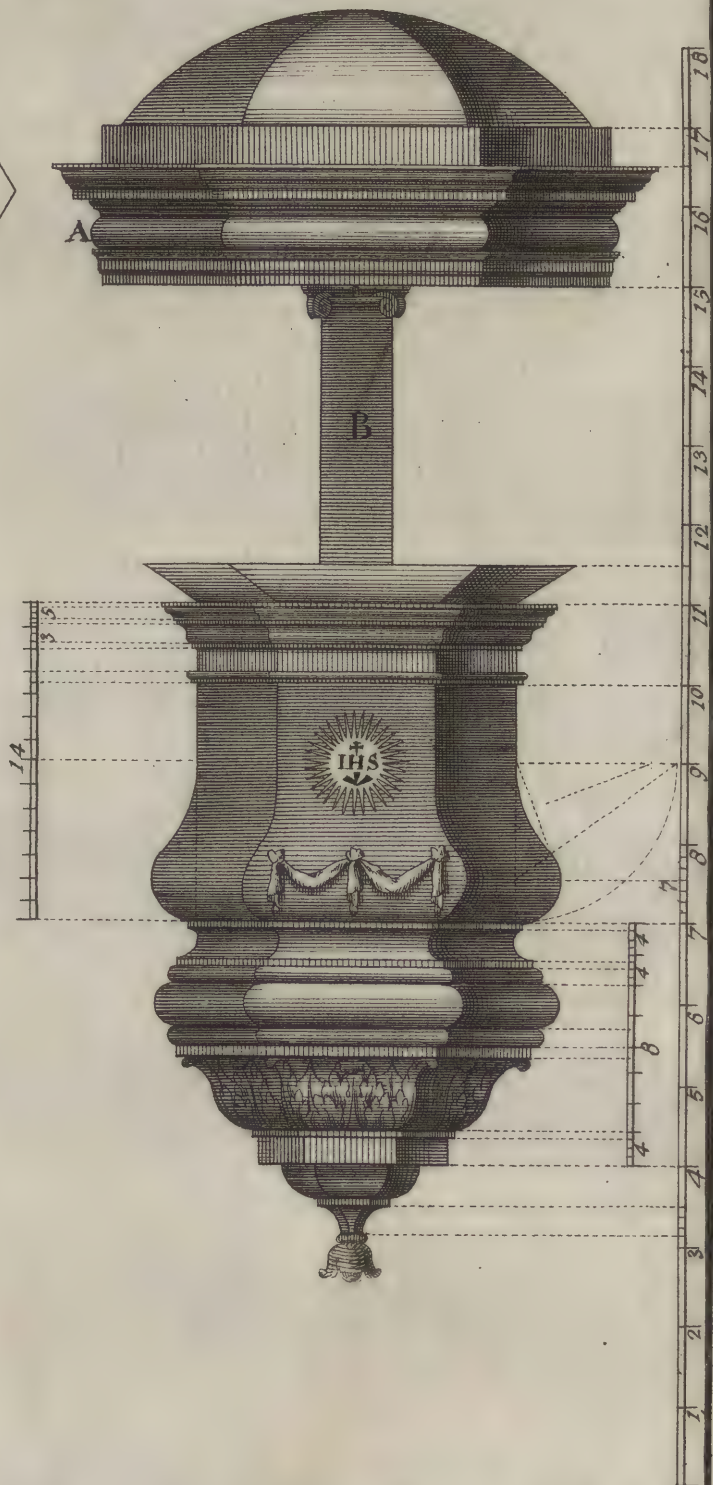
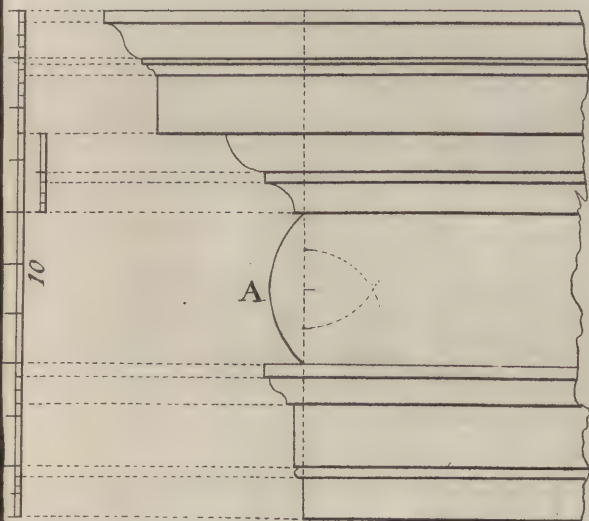
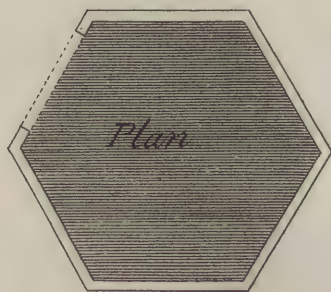








B



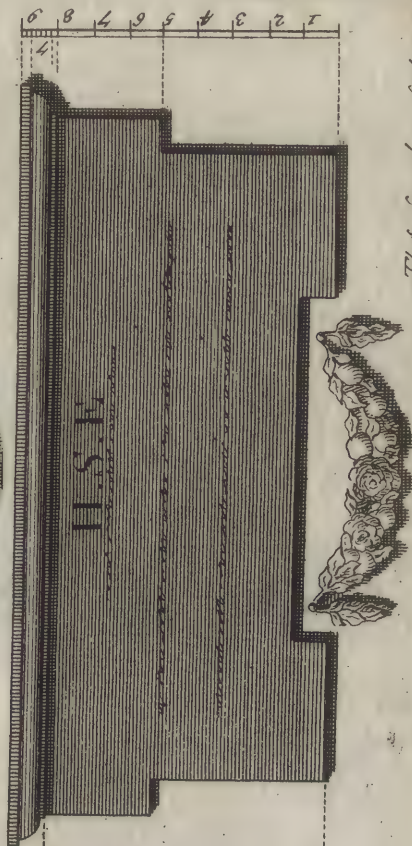
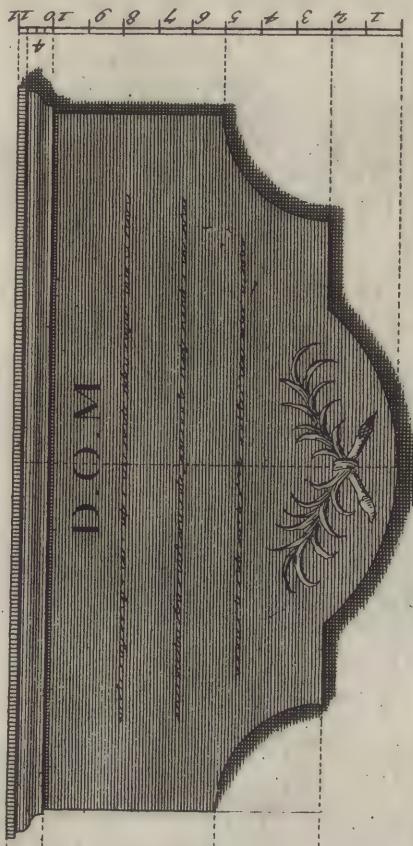
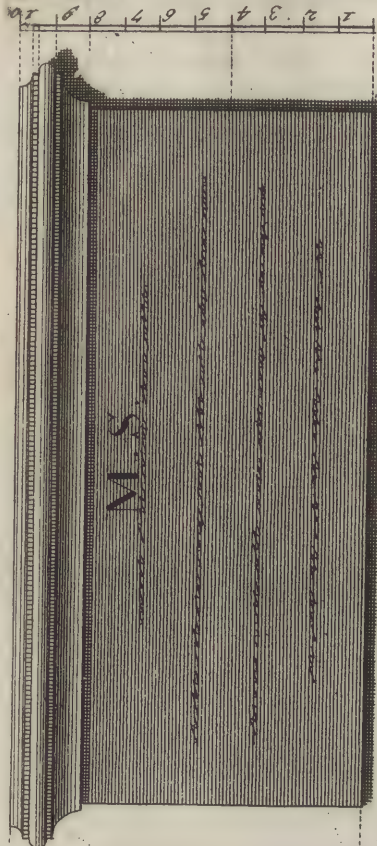
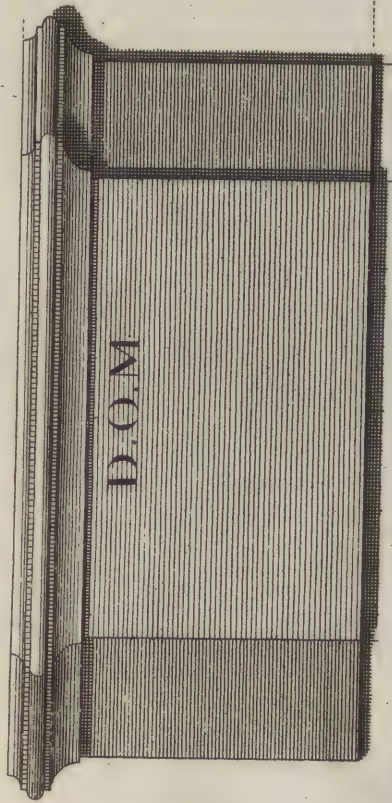
Batty Langley Invent and Delin. 1739.

Tho<sup>s</sup> Langley Sculp.





Tables for Monumental Inscriptions, near the Eye.



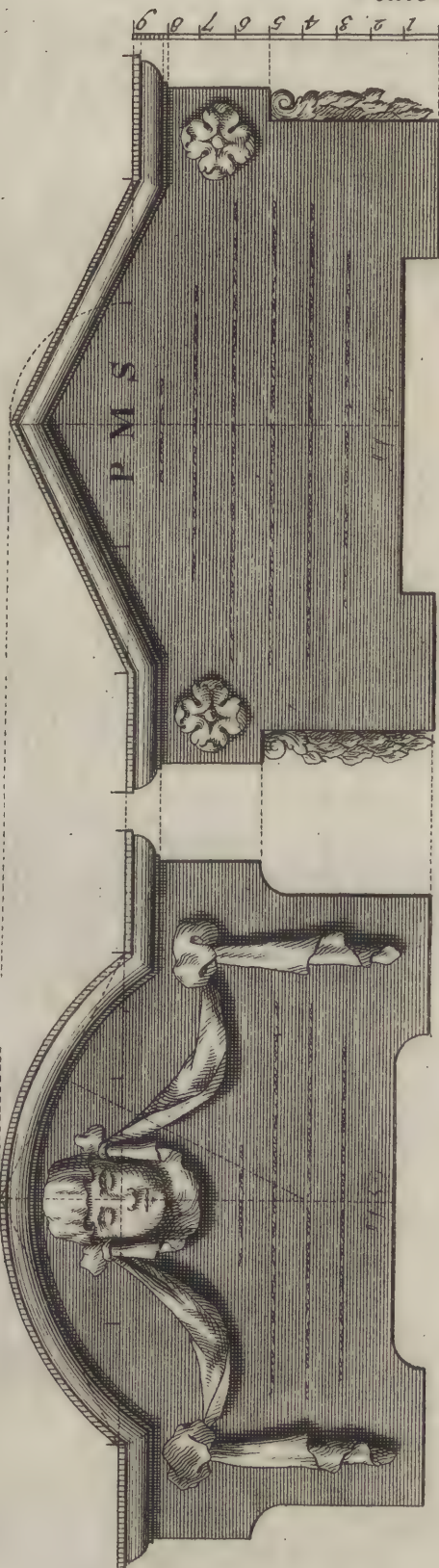
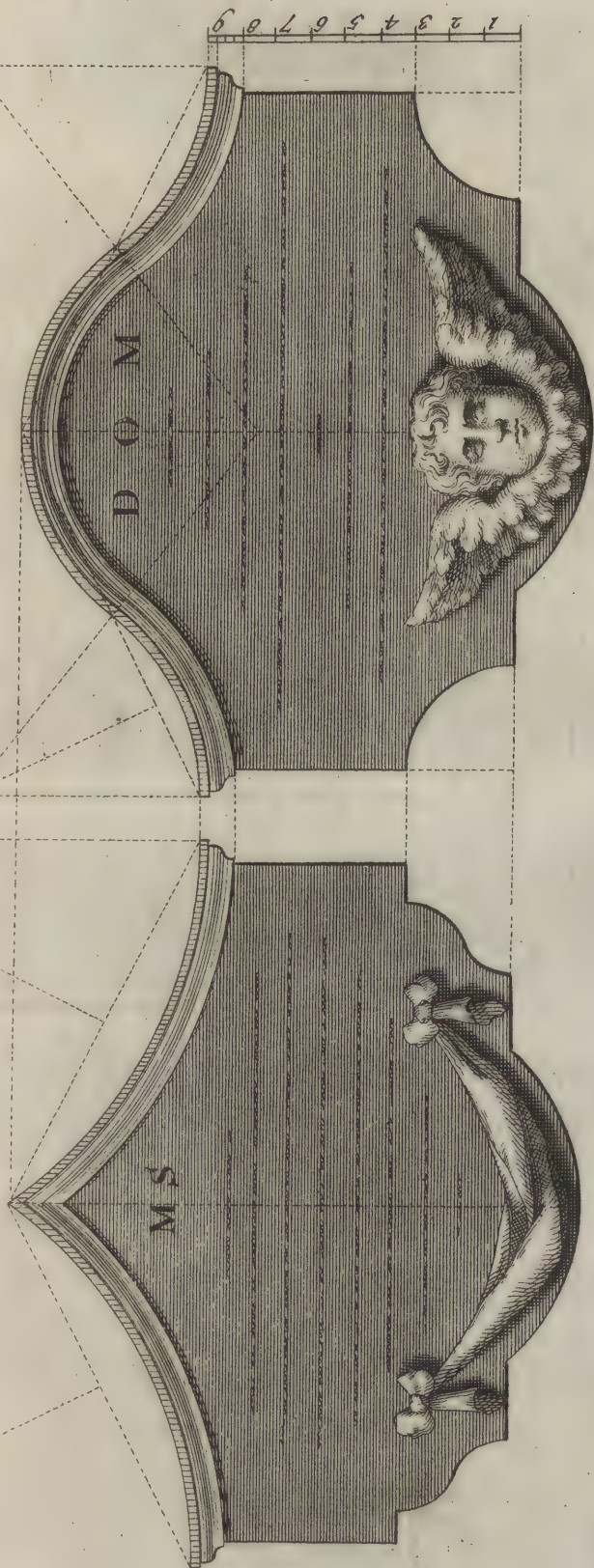
Batty Langley Invent & Delin 1739.

Tho' Langley Sculp.





*Tables for Monumental Inscriptions.*



*Plate CXIX.*

*Batty Langley Invent and Delin. 1739.*

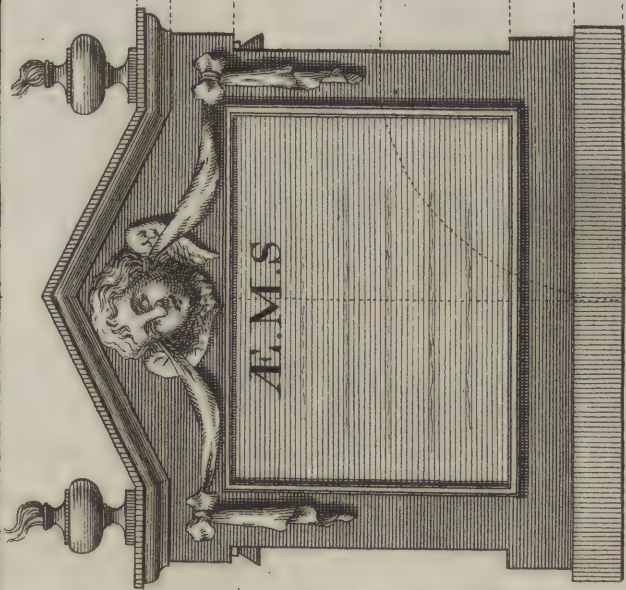
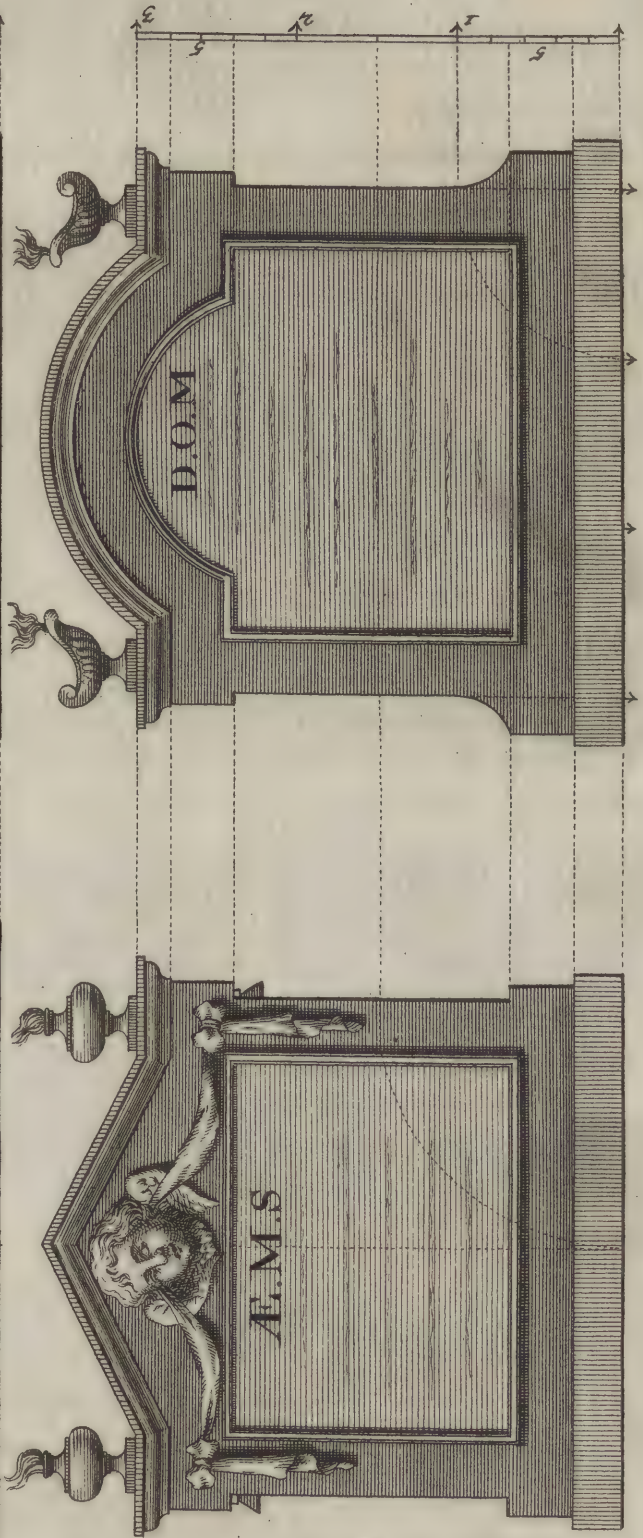
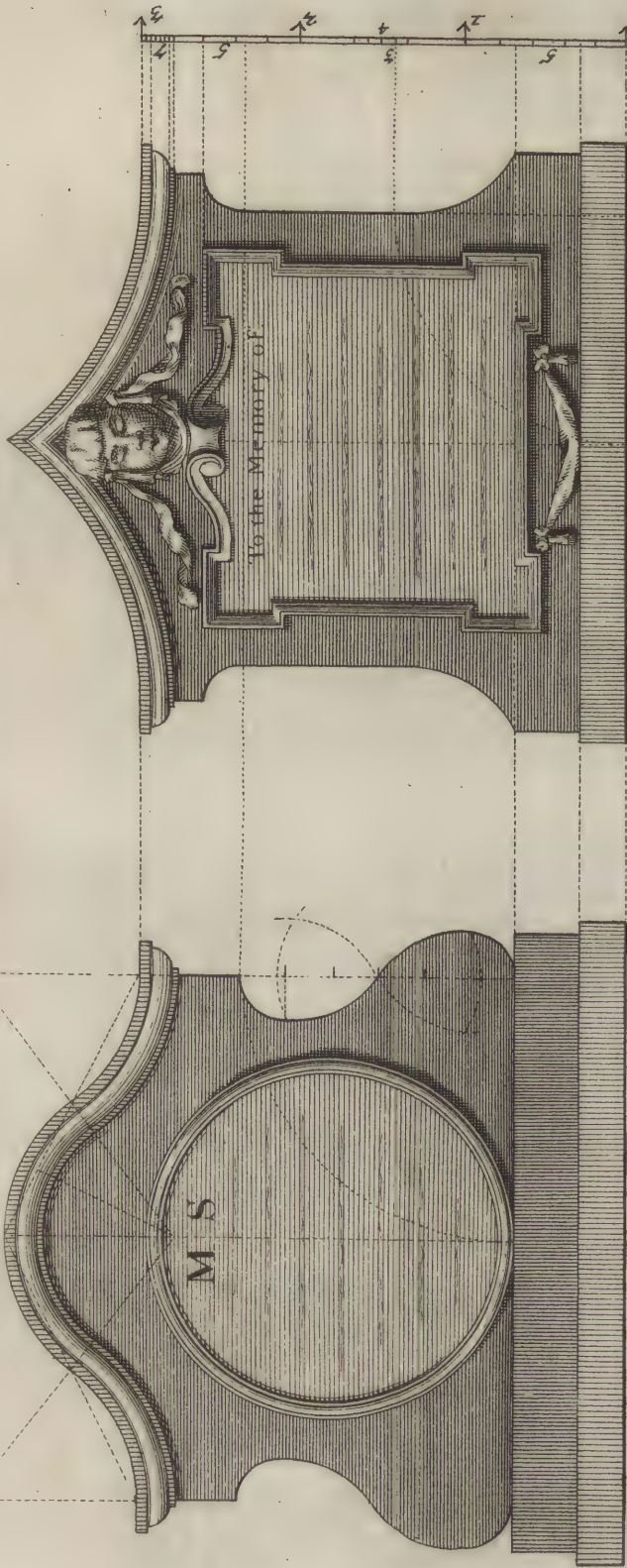
*Tho. Langley Sculp.*





*Tables for Monumental Inscriptions.*

*Plate CXX*



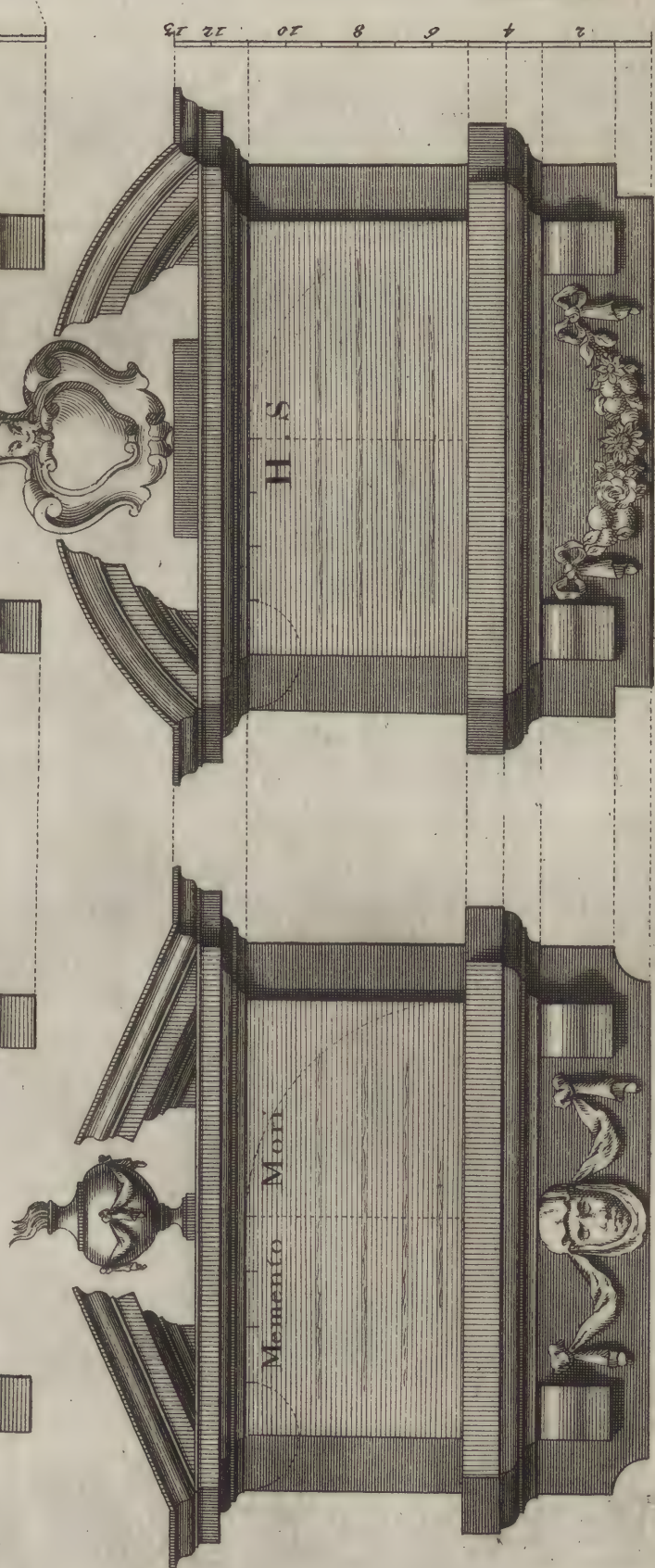
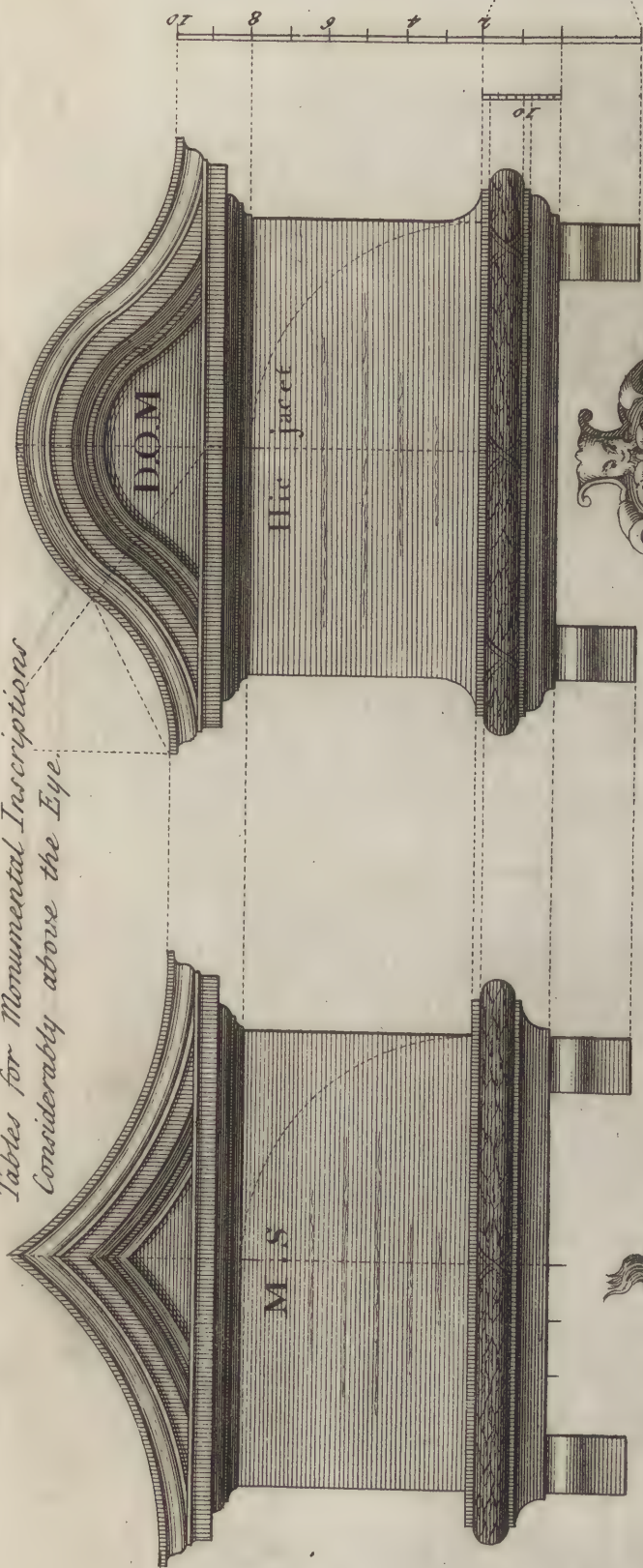
*Batty Langley Invent and delin 1739*

*Tho: Langley Sculp.*





*Tables for Monumental Inscriptions  
Considerably above the Eye.*



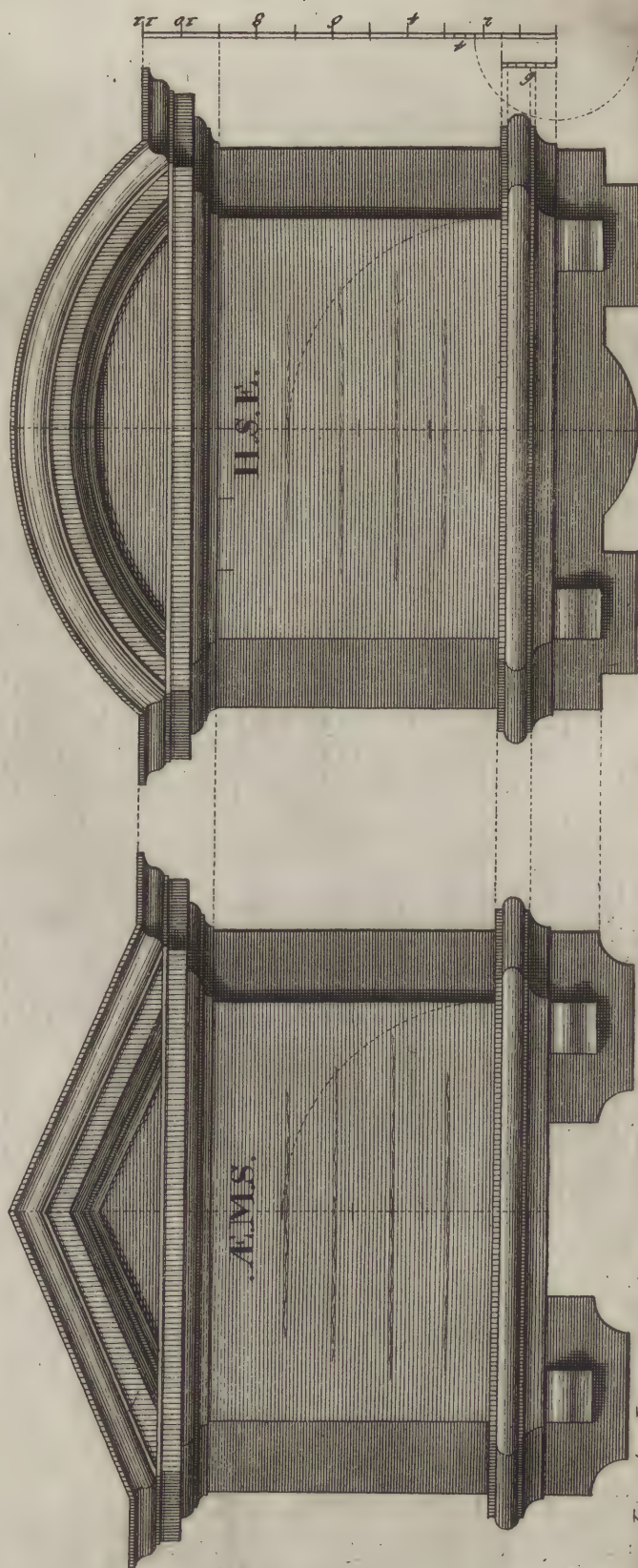
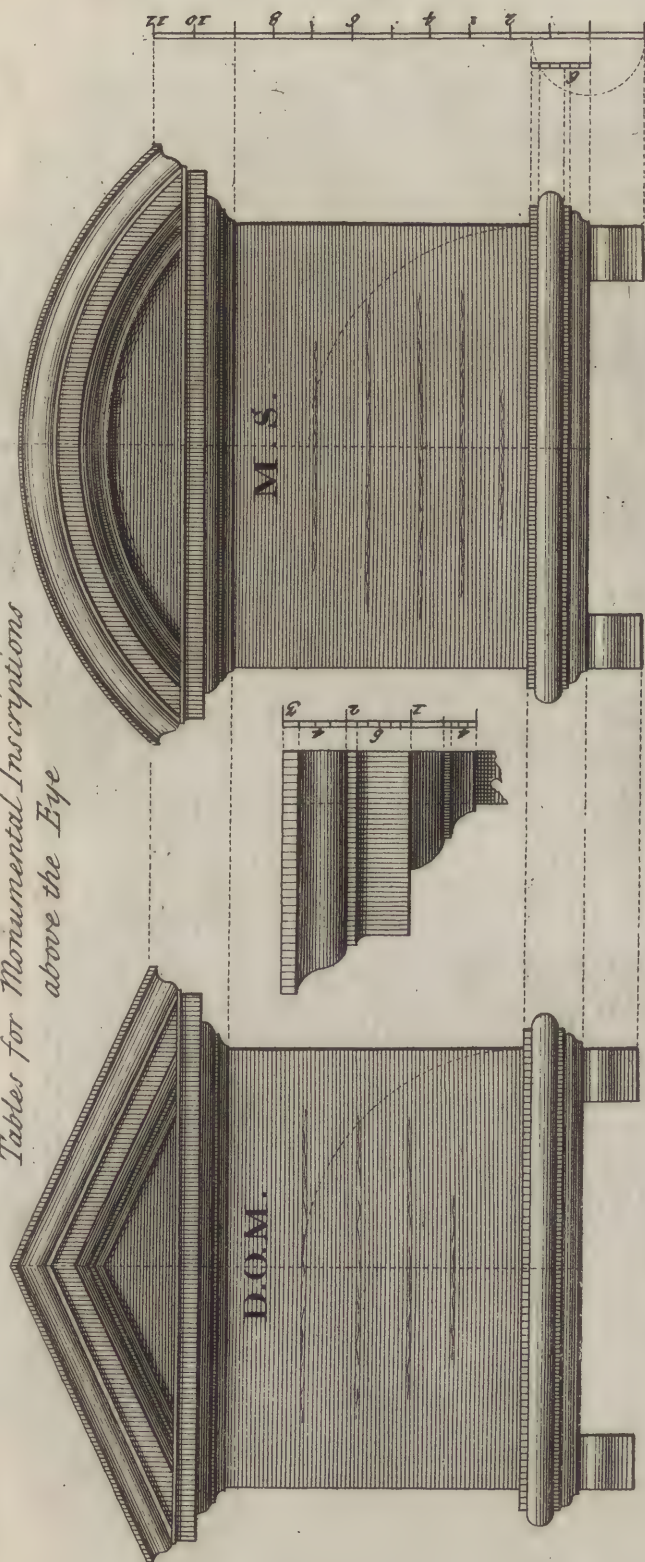
*Batty Langley Invent and delin 1739.*

*Thos. Langley Sculp.*





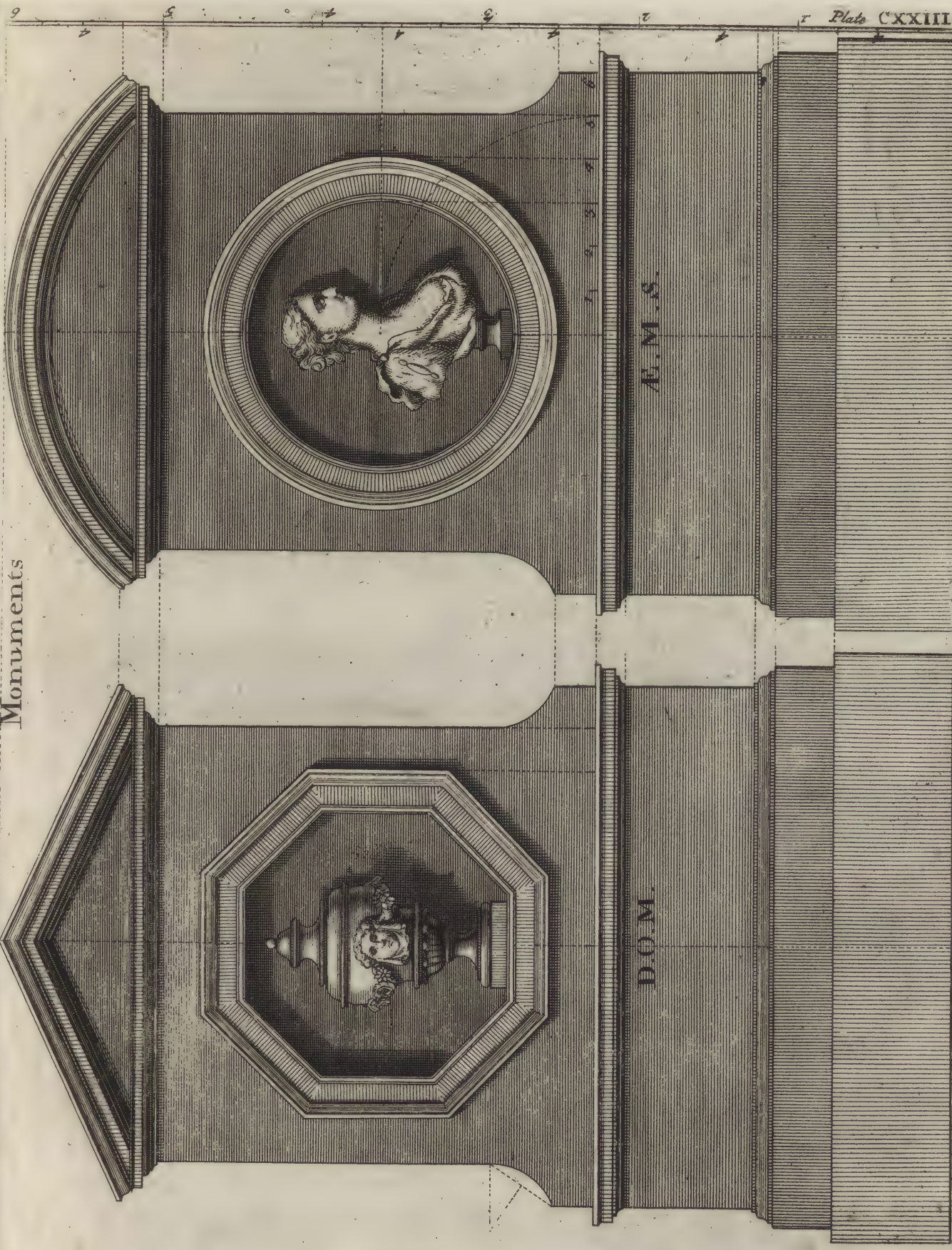
*Tables for Monumental Inscriptions  
above the Eye*











Tho' Langley Sculp.

Batty Langley Invent and delin 1739.





# Monuments

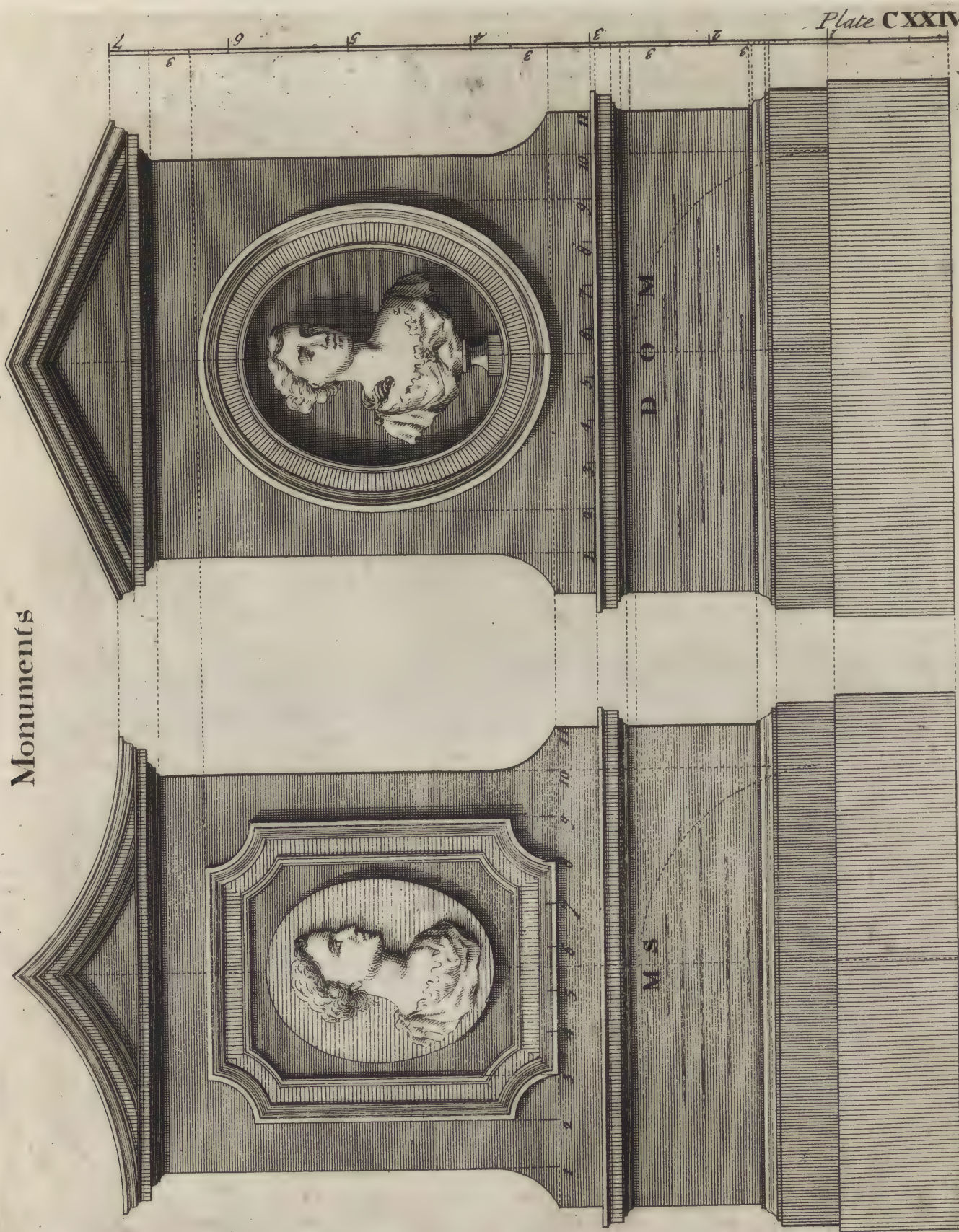


Plate CXXIV.

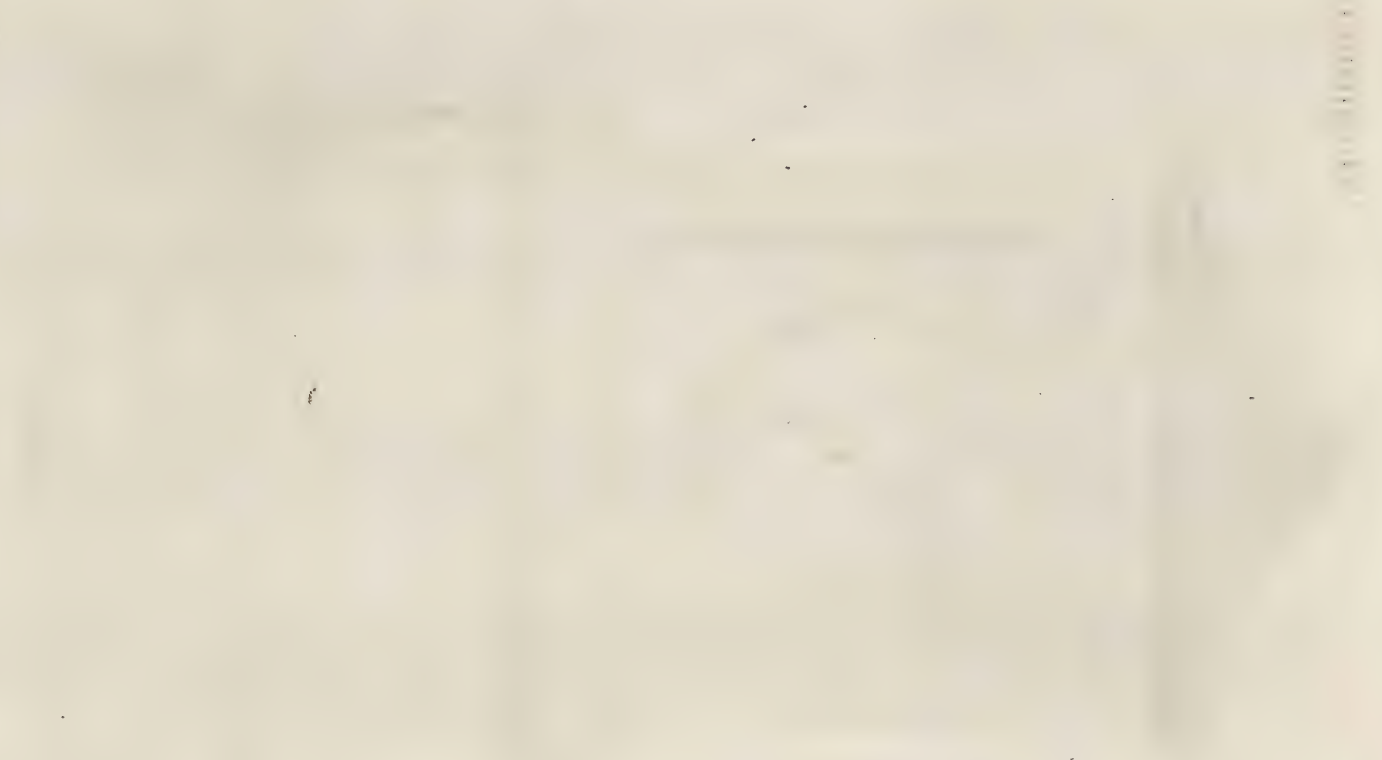
Tho. Langley Sculp.

Batty Langley Invent and Delin. 1739.





Valve



# Monuments.



Tho. Langley Sculp.

Batty Langley Invent and Delin. 1739.





Architectural

# Monuments.



Plate CXXVI.

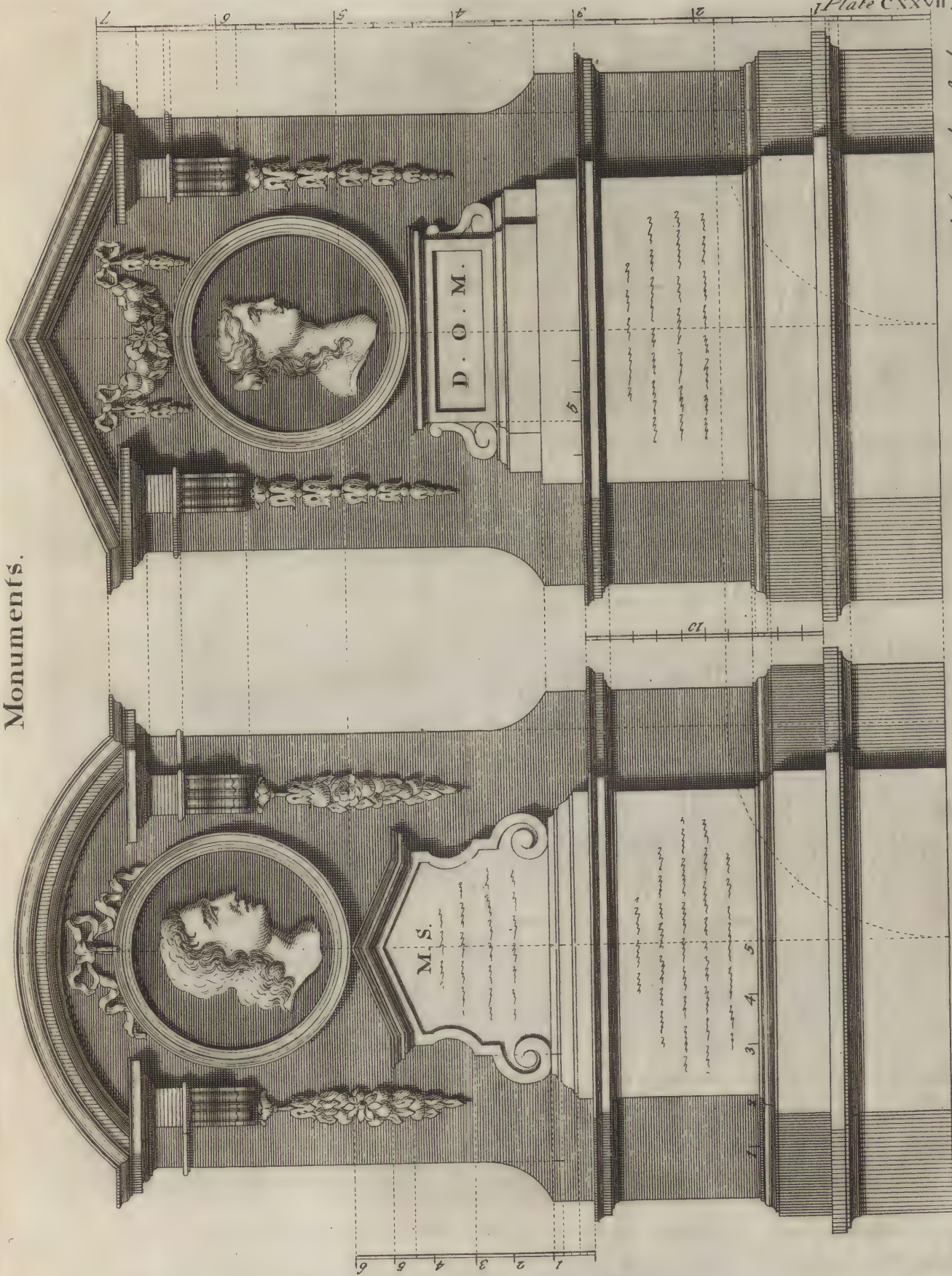
Tho. Langley Sculp.

Batty Langley Invent and Delin. 1739.





# Monuments.

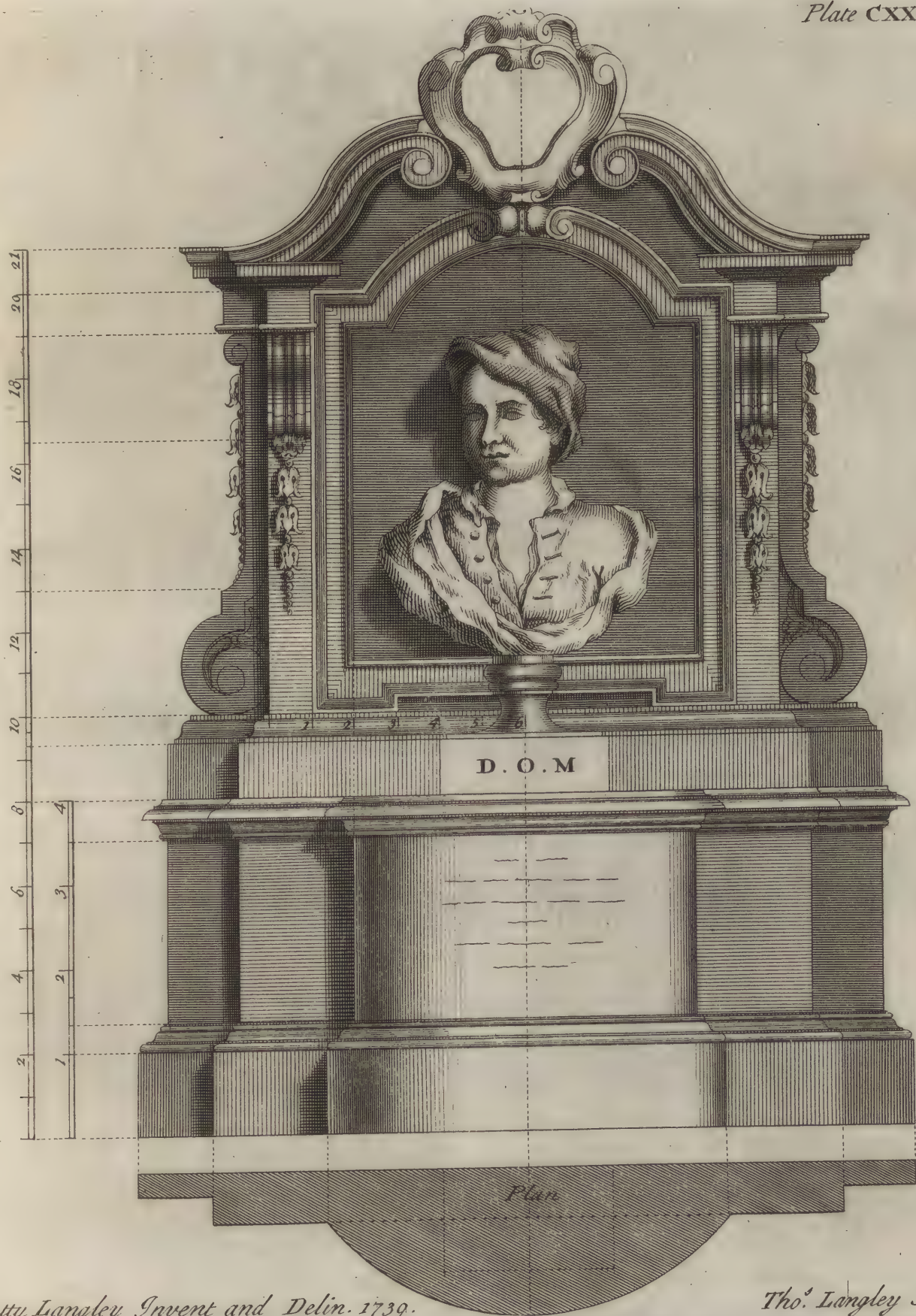


*Thos. Langley Sculp.*

*Batty Langley Invent and Delin. 1739.*

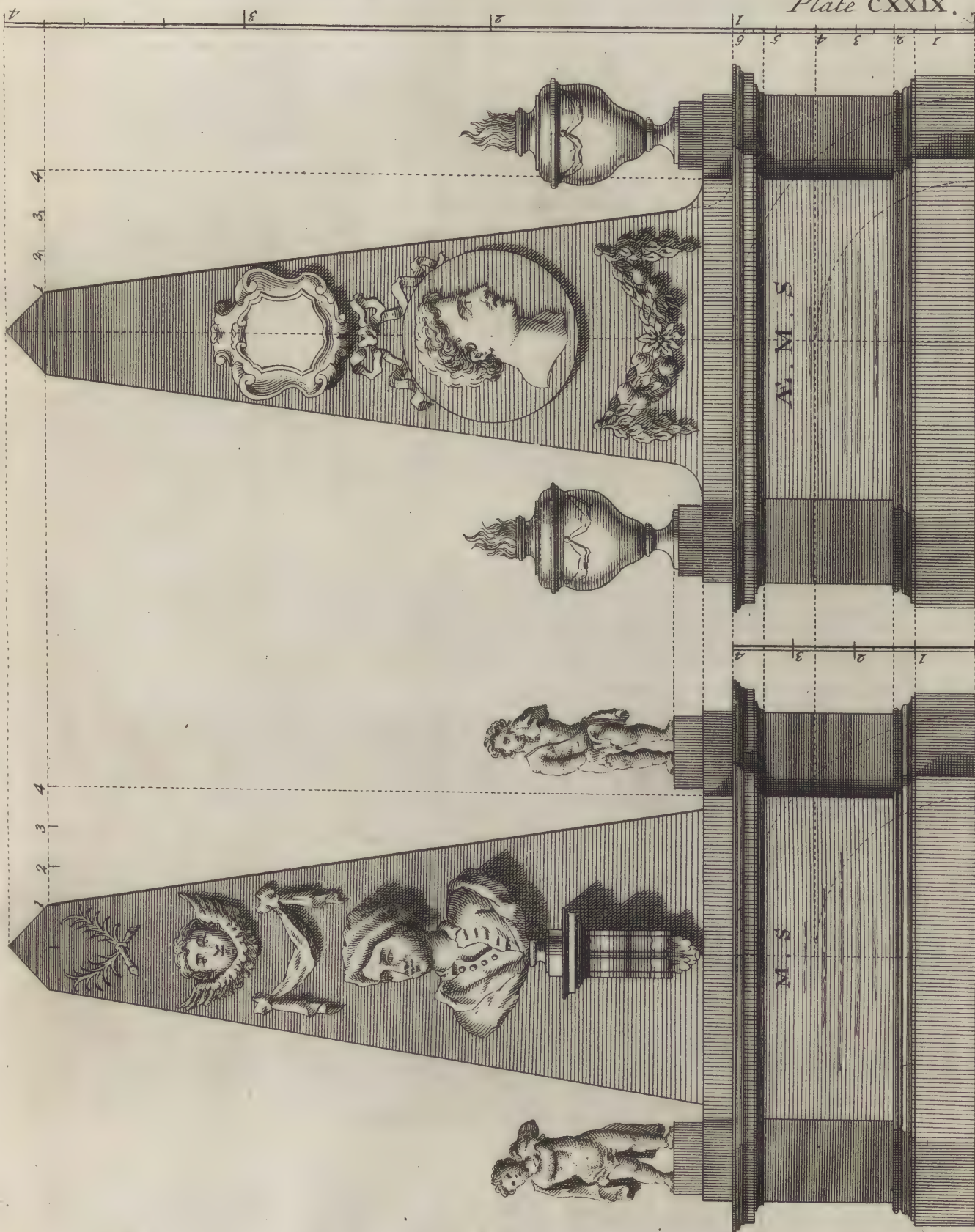












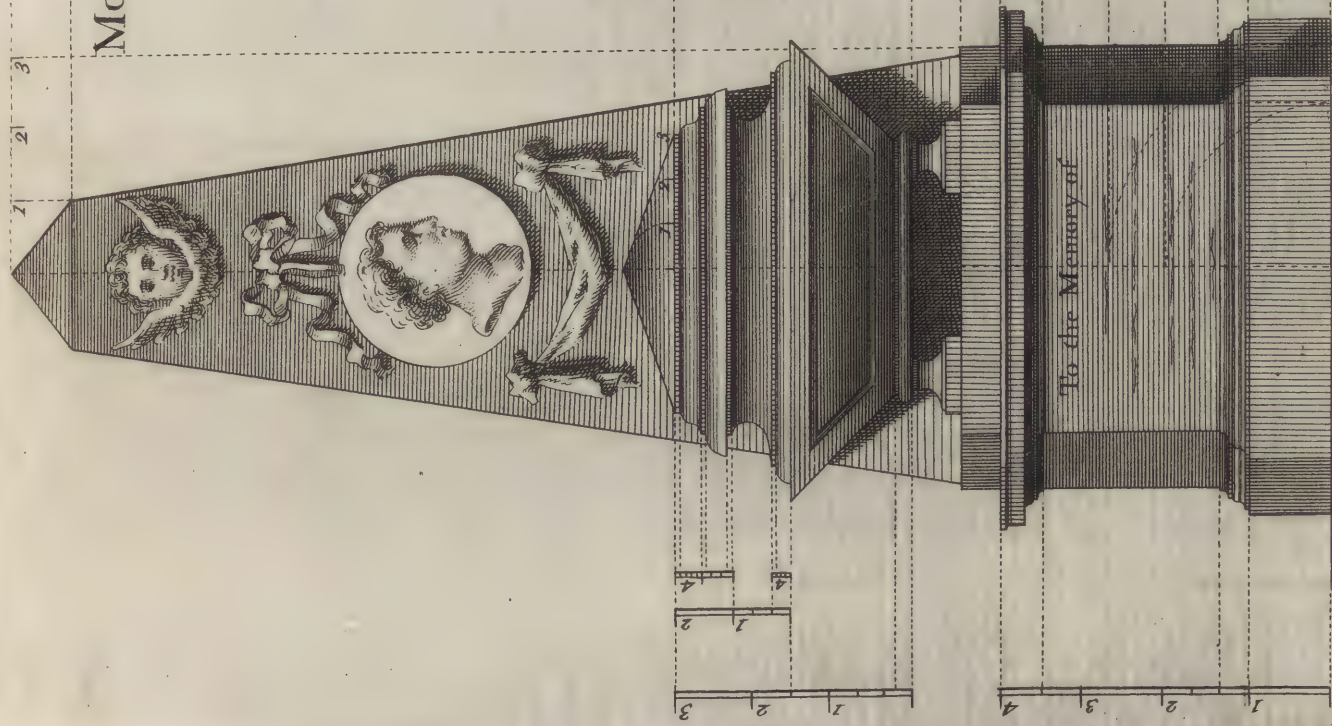
Tho. Langley Sculp.

Batty Langley Invent and Delin. 1739.



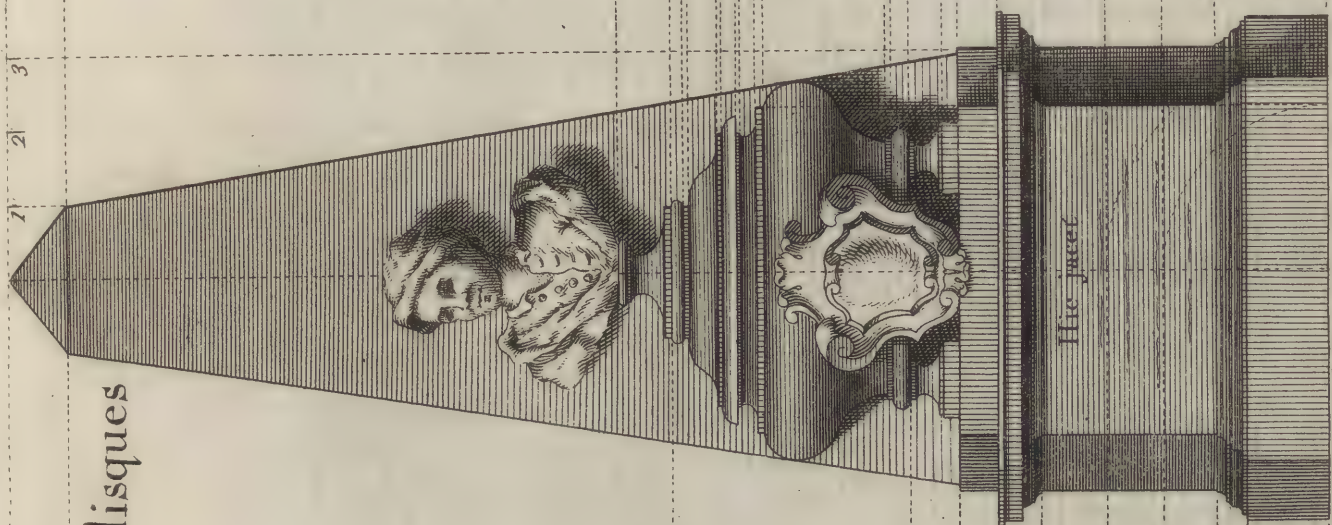


# Monumental Obelisks



To the Memory of

Batty Langley Invent and Delin. 1739.



Hic jacet

Plate CXXX.

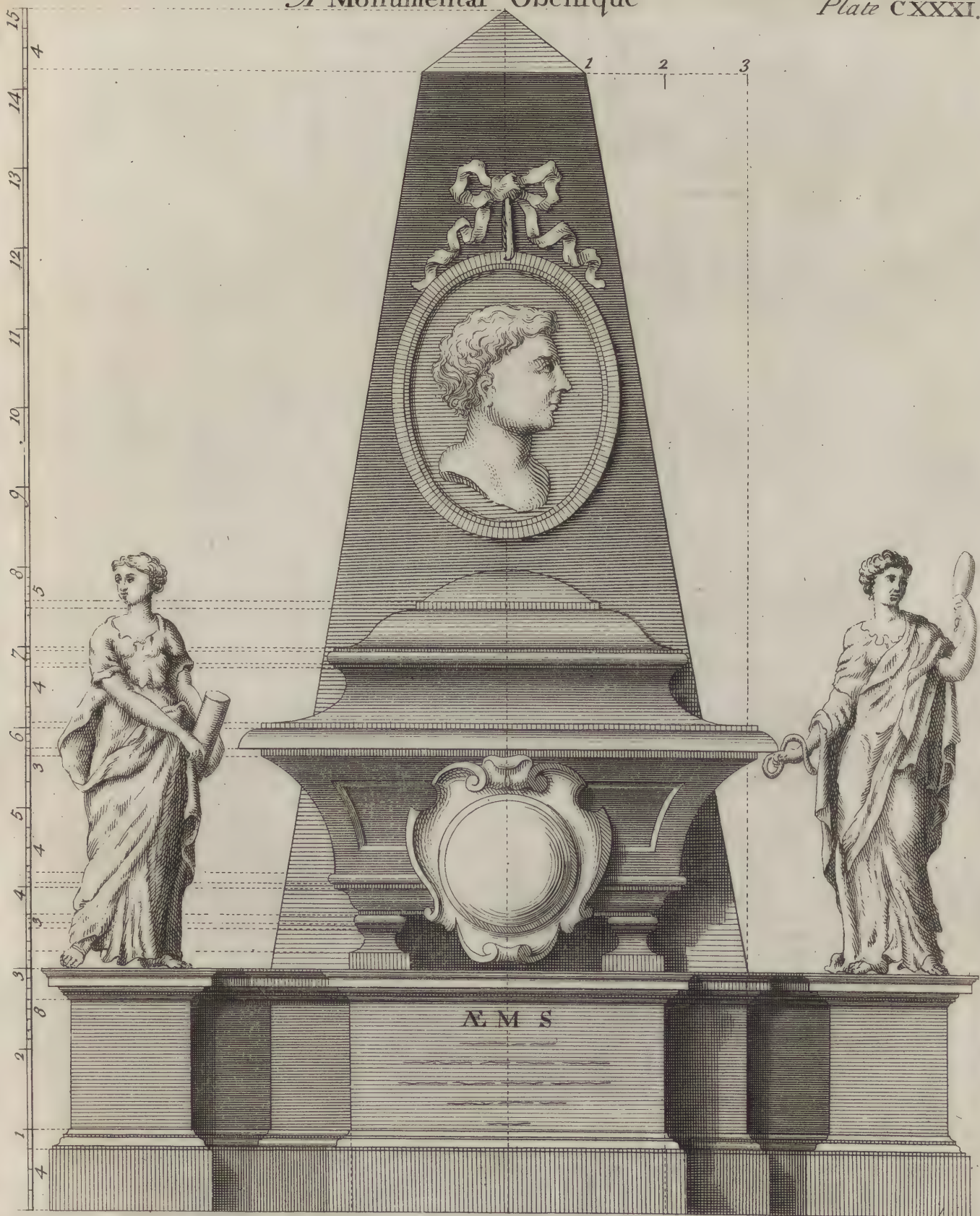
Tho. Langley Sculp.



THE UNIVERSITY OF CHICAGO

*A Monumental Obelisque*

*Plate CXXXI.*



*Batty Langley Invent and Delin. 1739.*

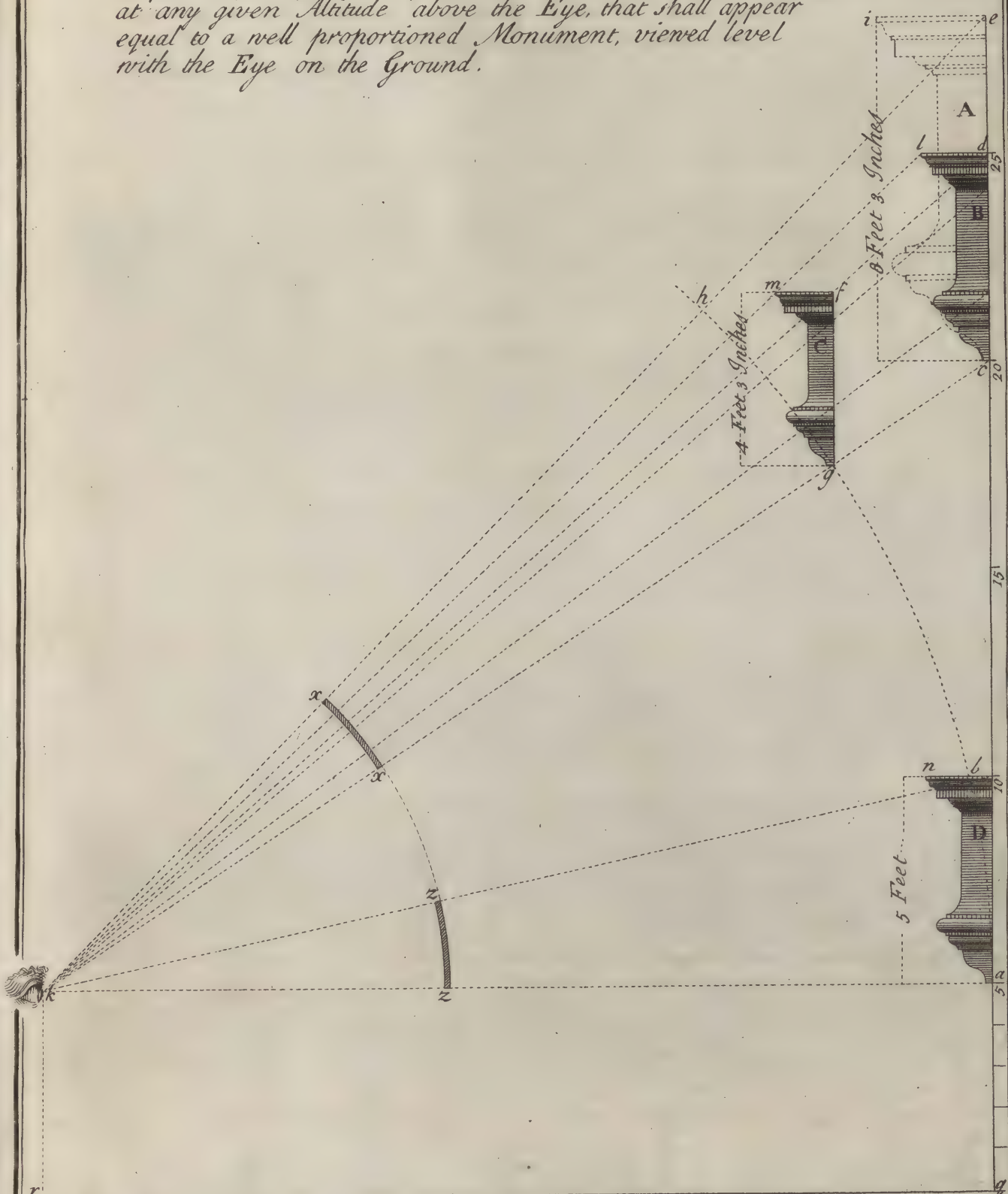
*Tho<sup>d</sup>. Langley Sculp.*





To find the Magnitude of a Monument to be fixed  
at any given Altitude above the Eye, that shall appear  
equal to a well proportioned Monument, viewed level  
with the Eye on the Ground.

Plate CXXXII.







Monumental Obelisks



Thos Langley sculp.

1739

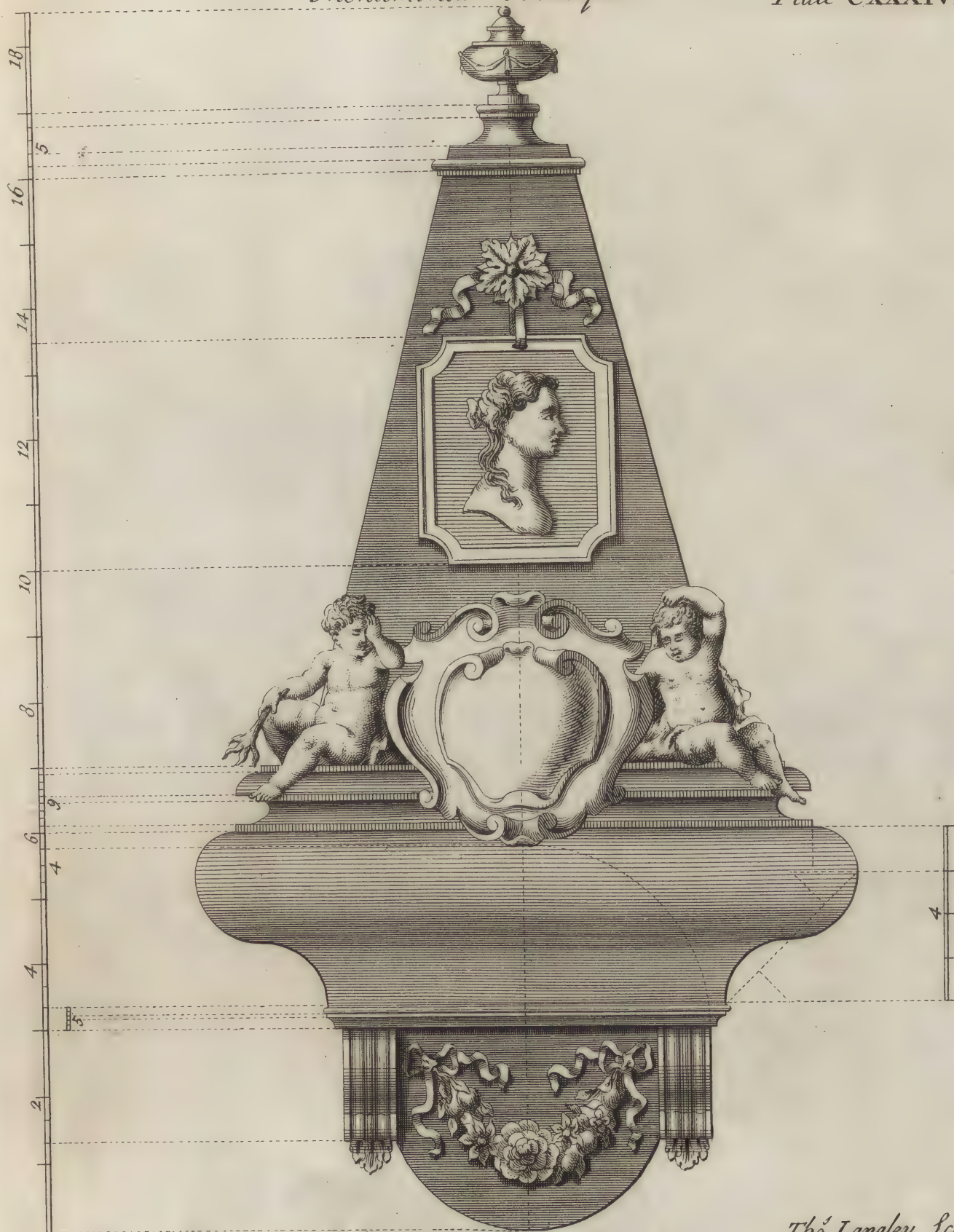
B. Langley Invent and delin





*Monumental Obelisque.*

*Plate CXXXIV.*

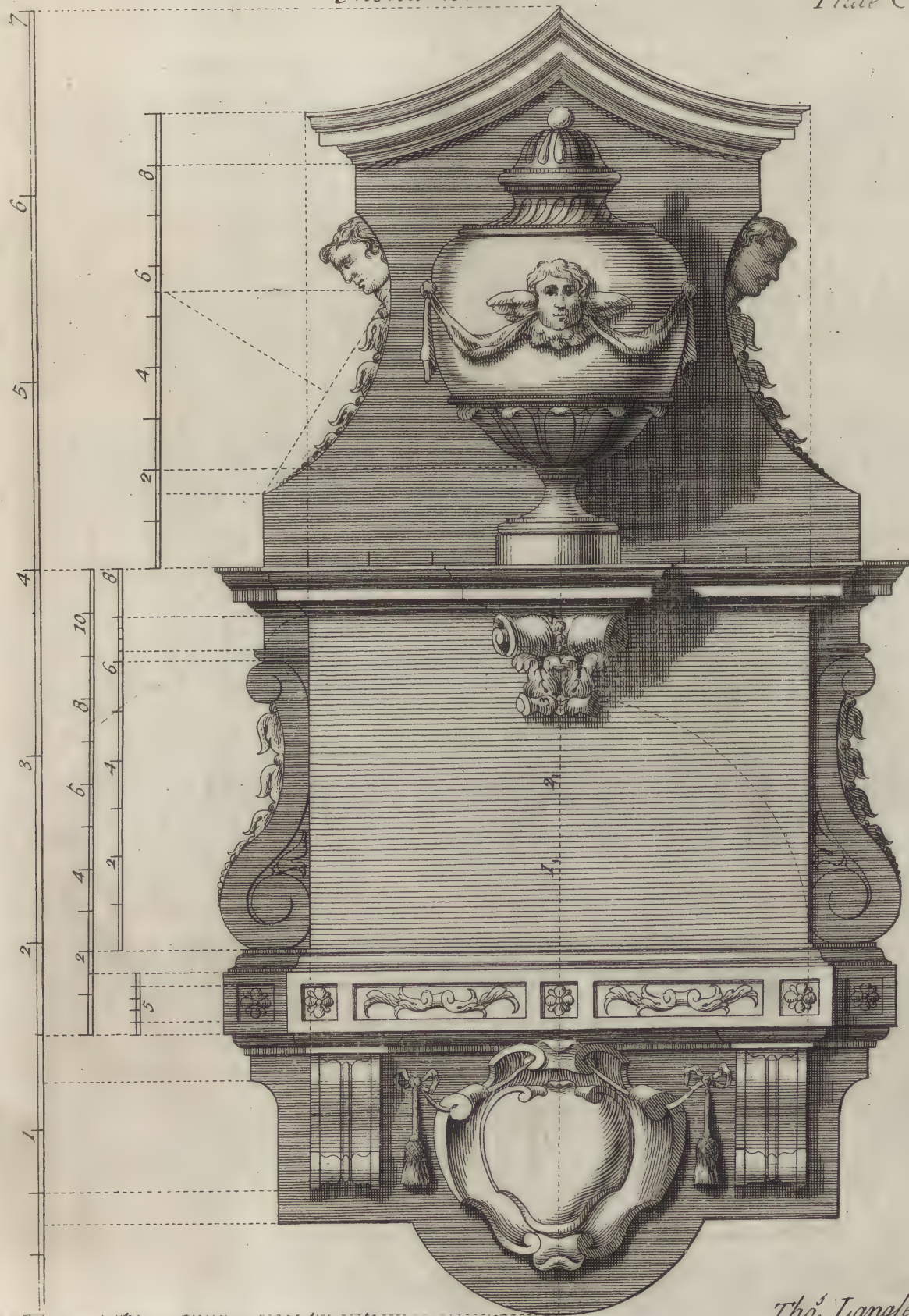


*Batty Langley Invent and Delin. 1739.*

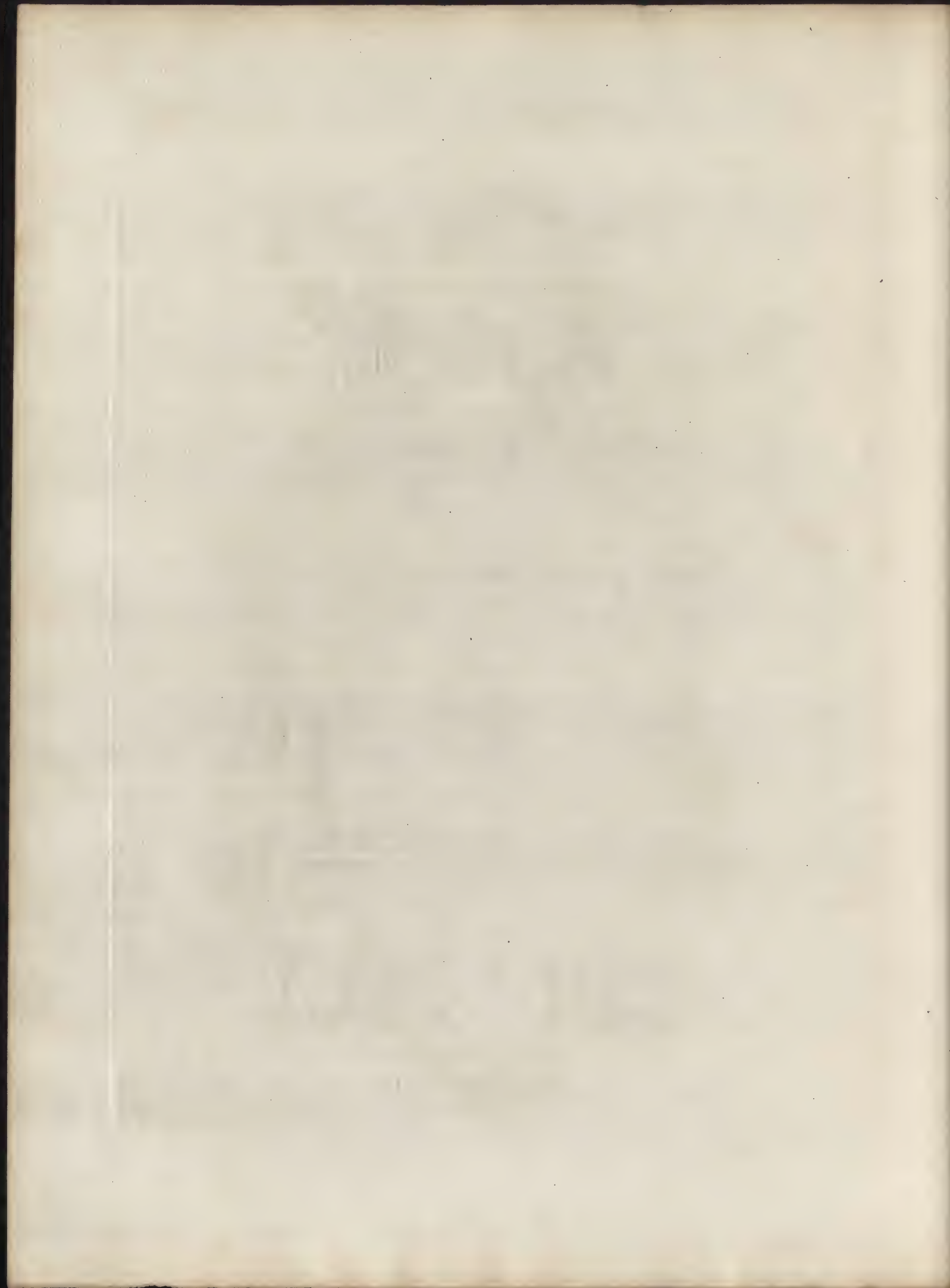
*Tho. Langley Sculp.*

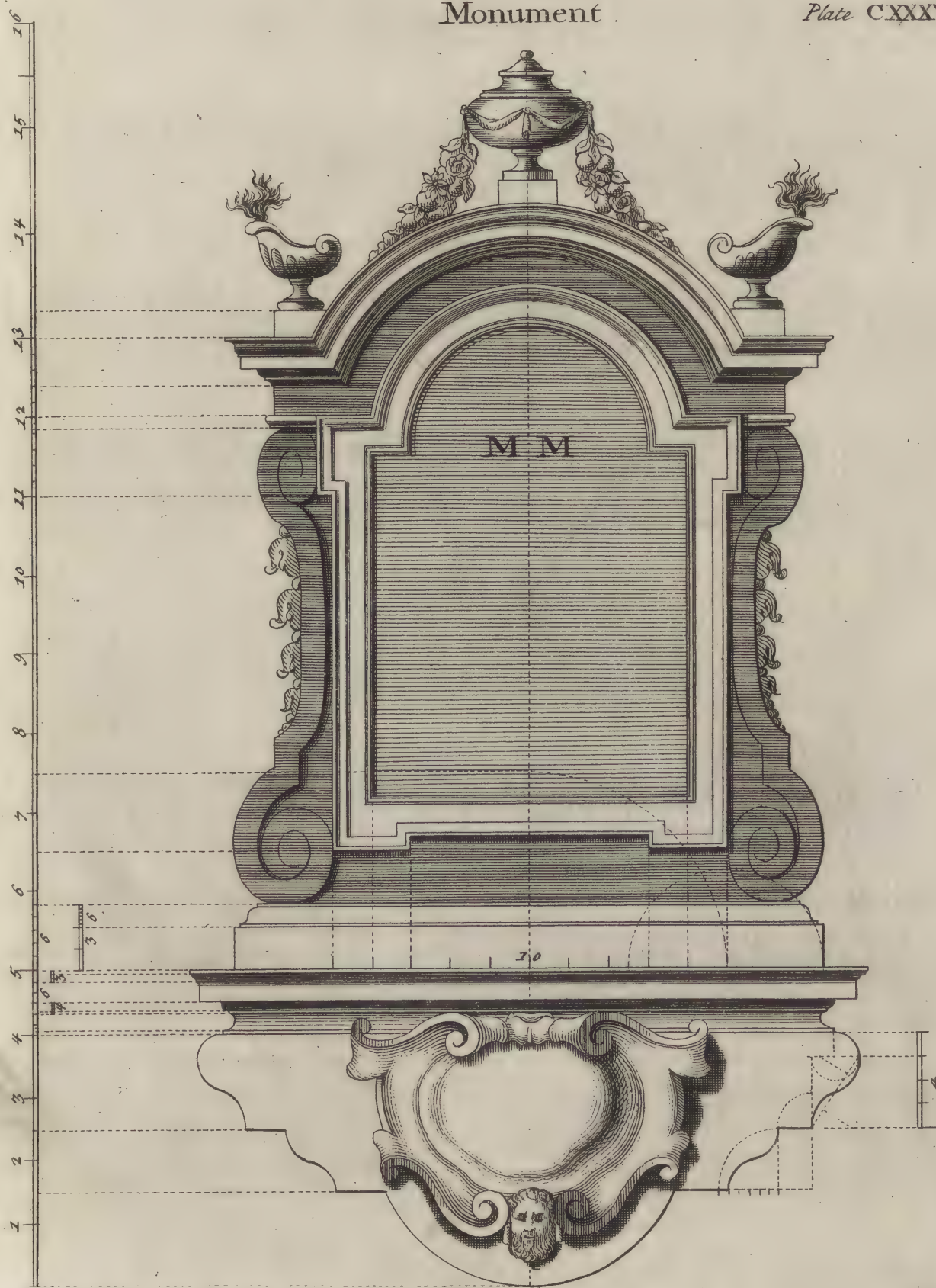










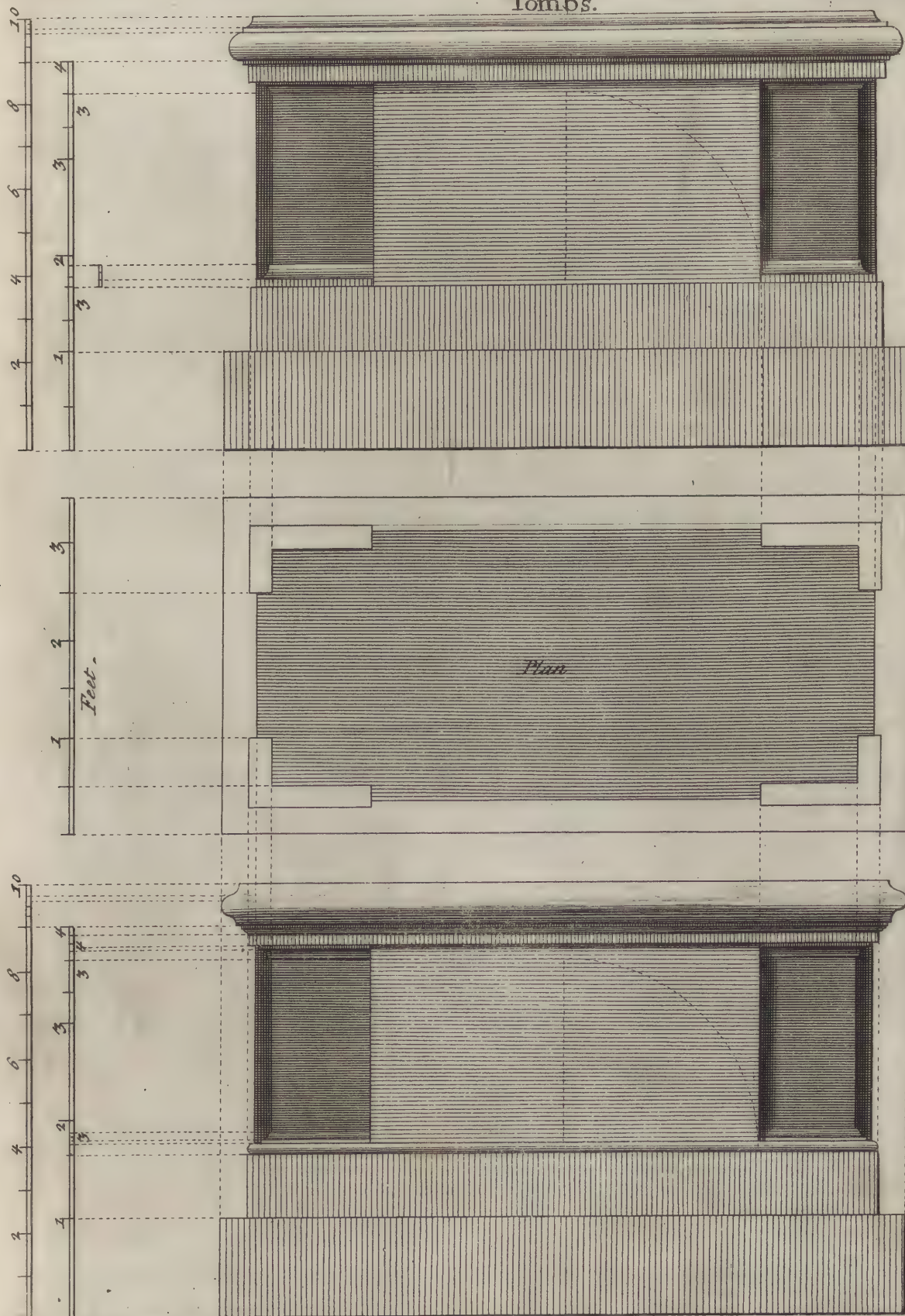






Tombs.

Plate  
CXXXVII



Batty Langley Invent and delin

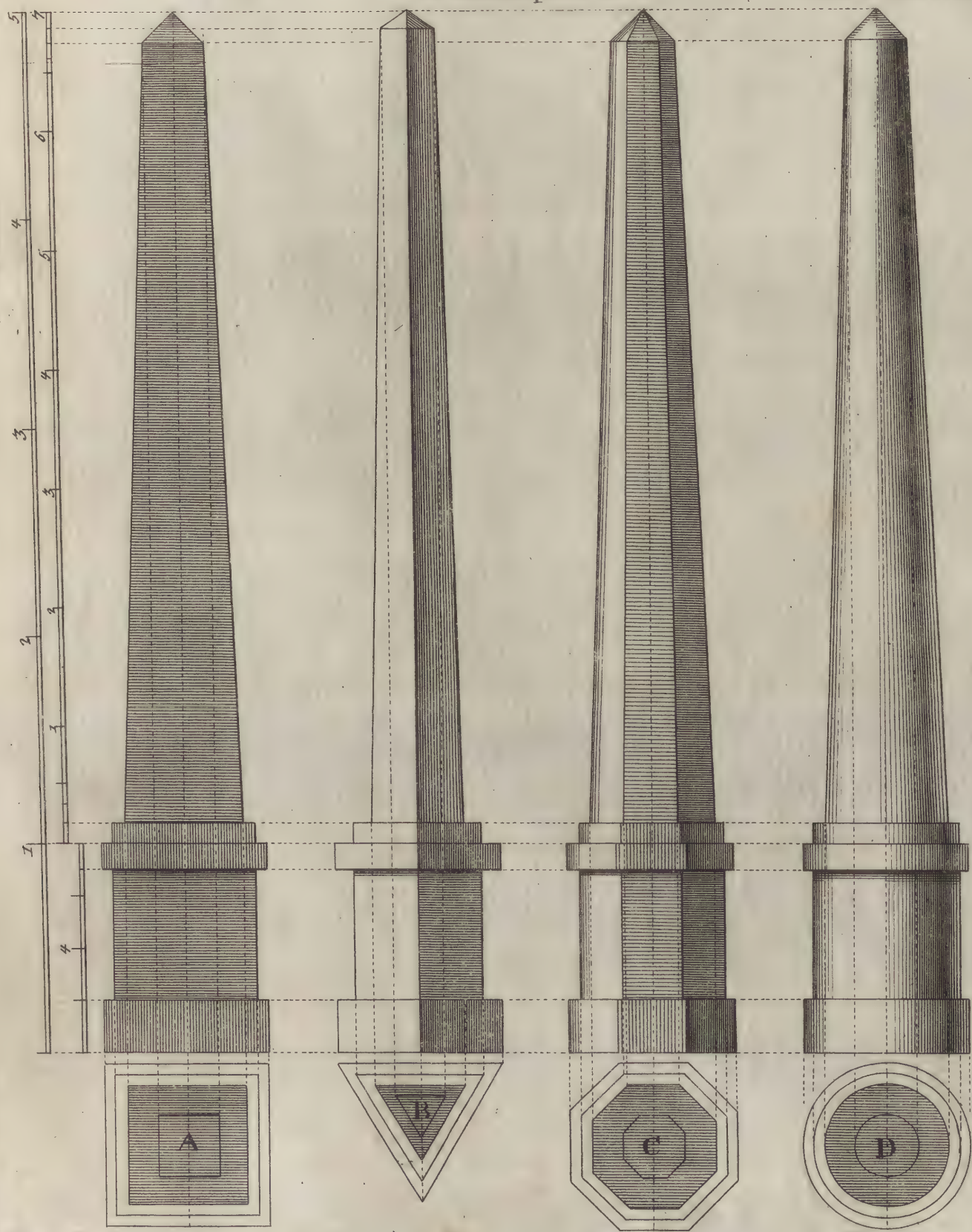
Tho<sup>s</sup> Langley Sculp





# Obelisques

Plate. CXXXVIII



Batty Langley Invent and delin

Tho<sup>s</sup> Langley Sculp





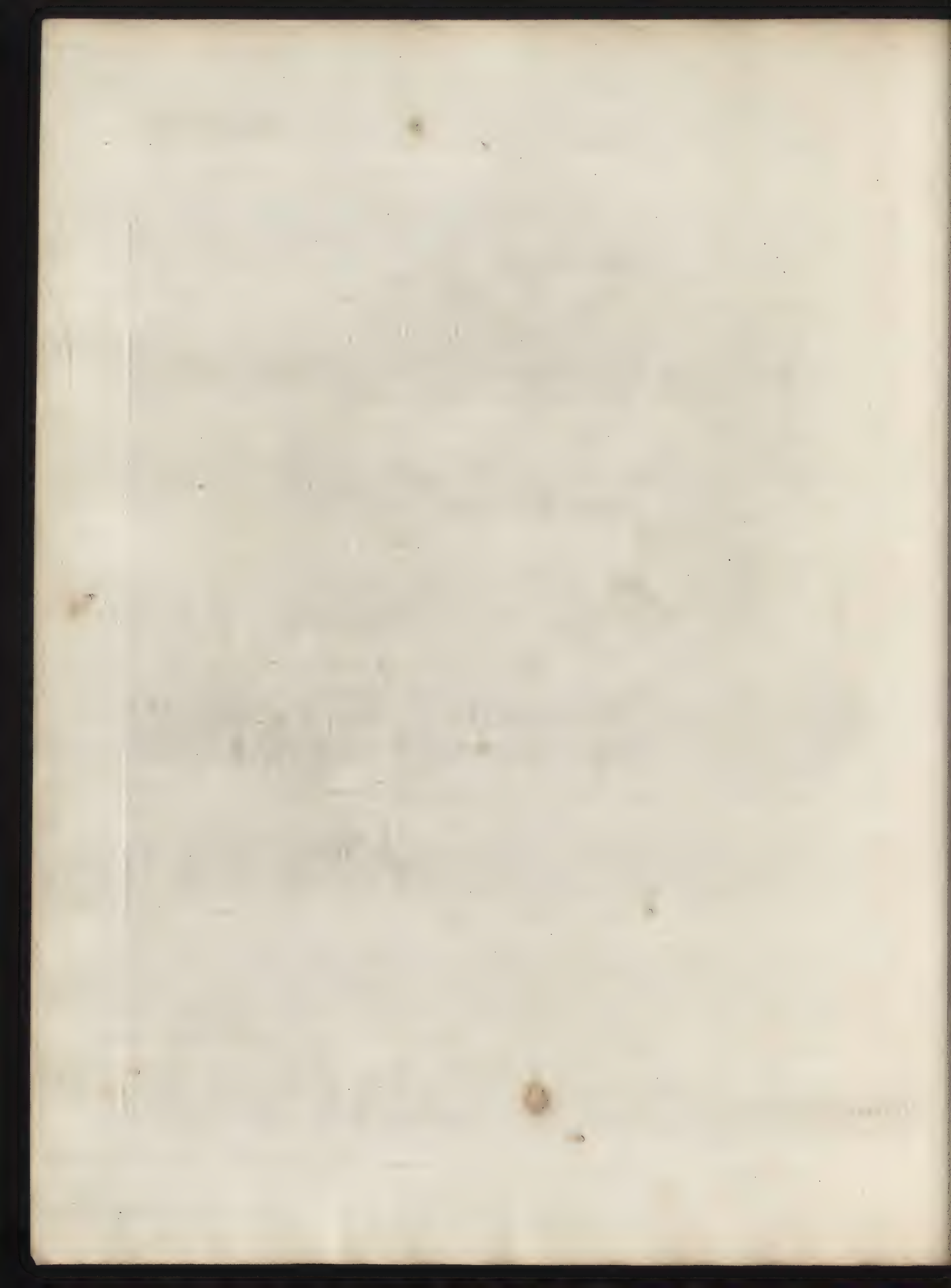
Time Piece

Plate CXXXIX



*Tho' Langley Invent and Sculp*



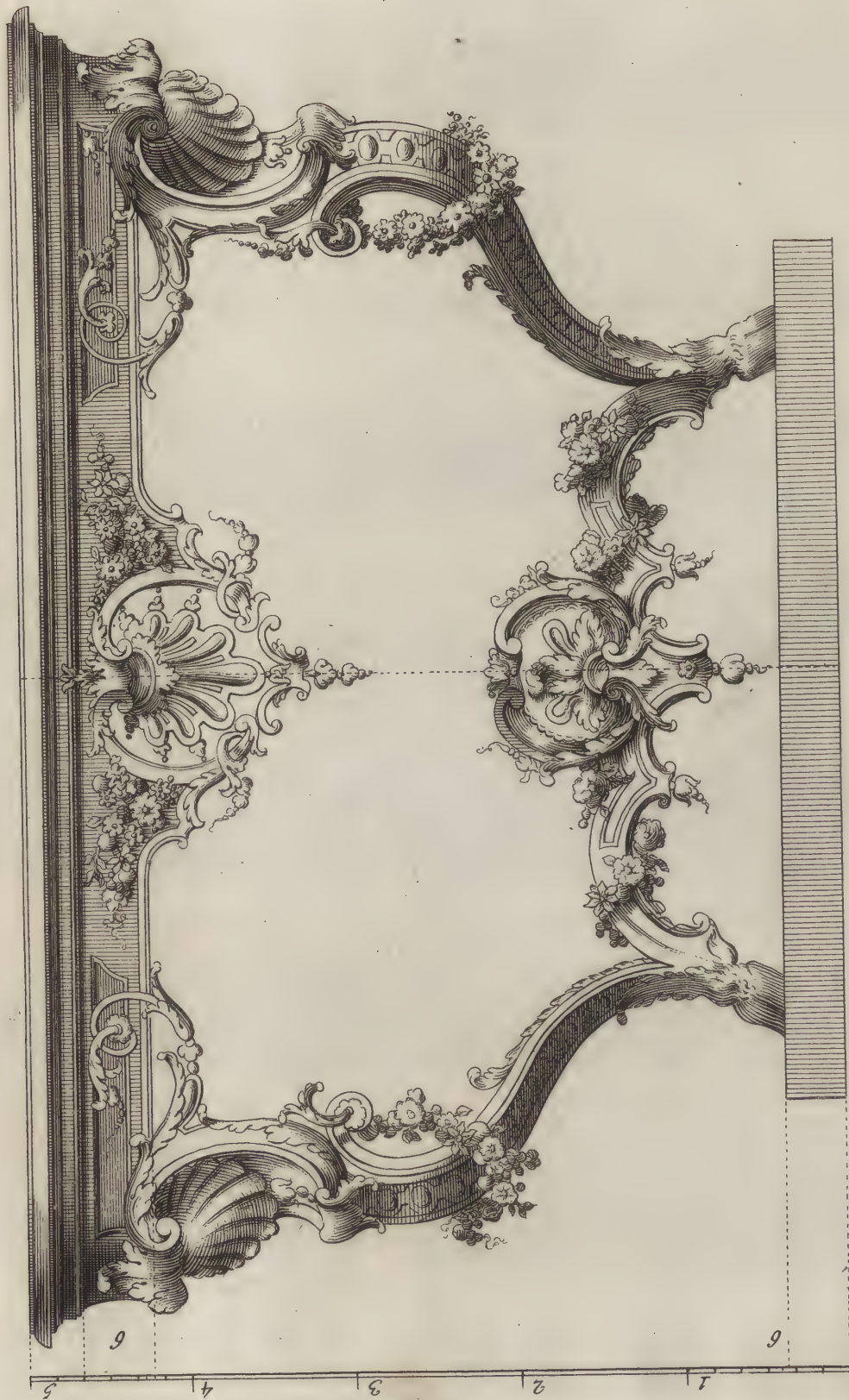








Marble Table



Tho: Langley Invent Delin and Sculp. 1739





Marble Table



Tho: Langley Invent Delin and Sculp. 1739





Marble Table



*Thos Targley Invent delin and sculp 1739*





Marble Table

Plate CXLIII



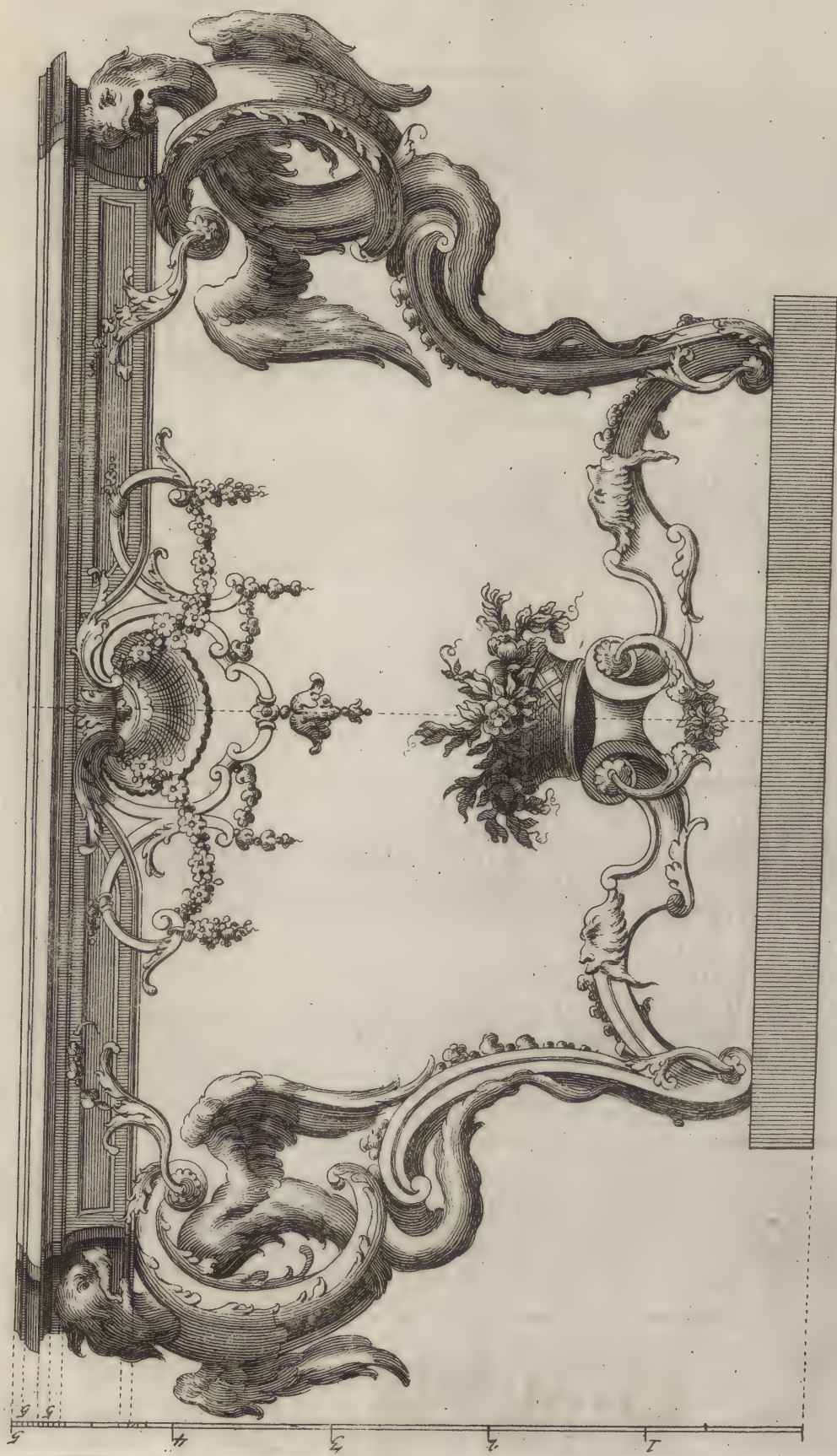
*Tho' Langley Invent delin and sculp 1739*





# Marble Table

Plate CXLV



*Tho: Langley Invent delin & Sculp 1739*

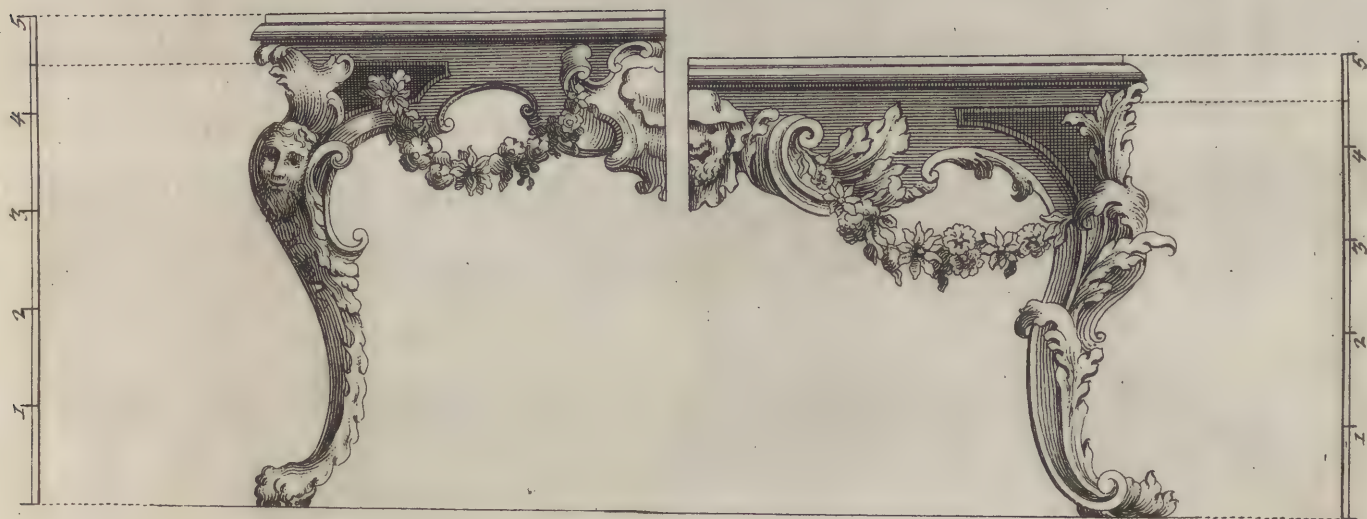








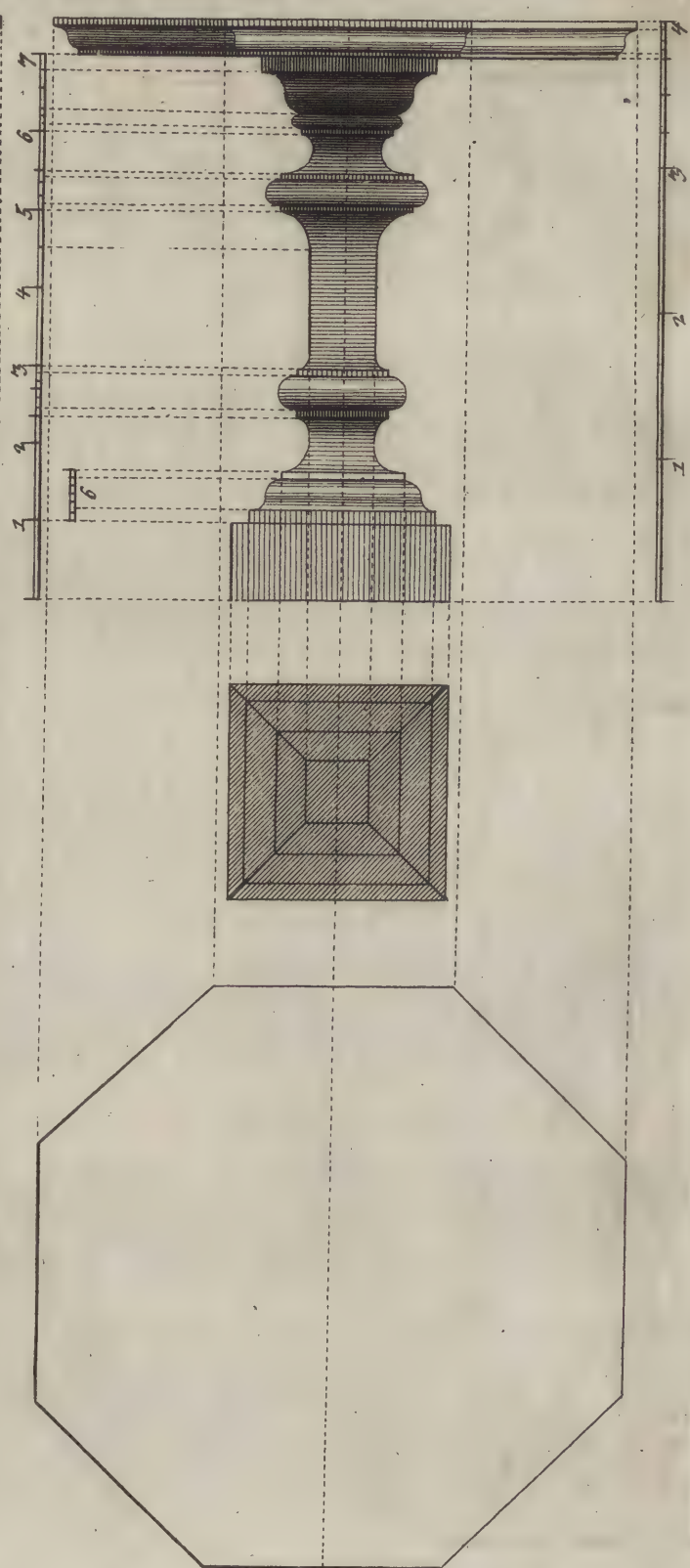
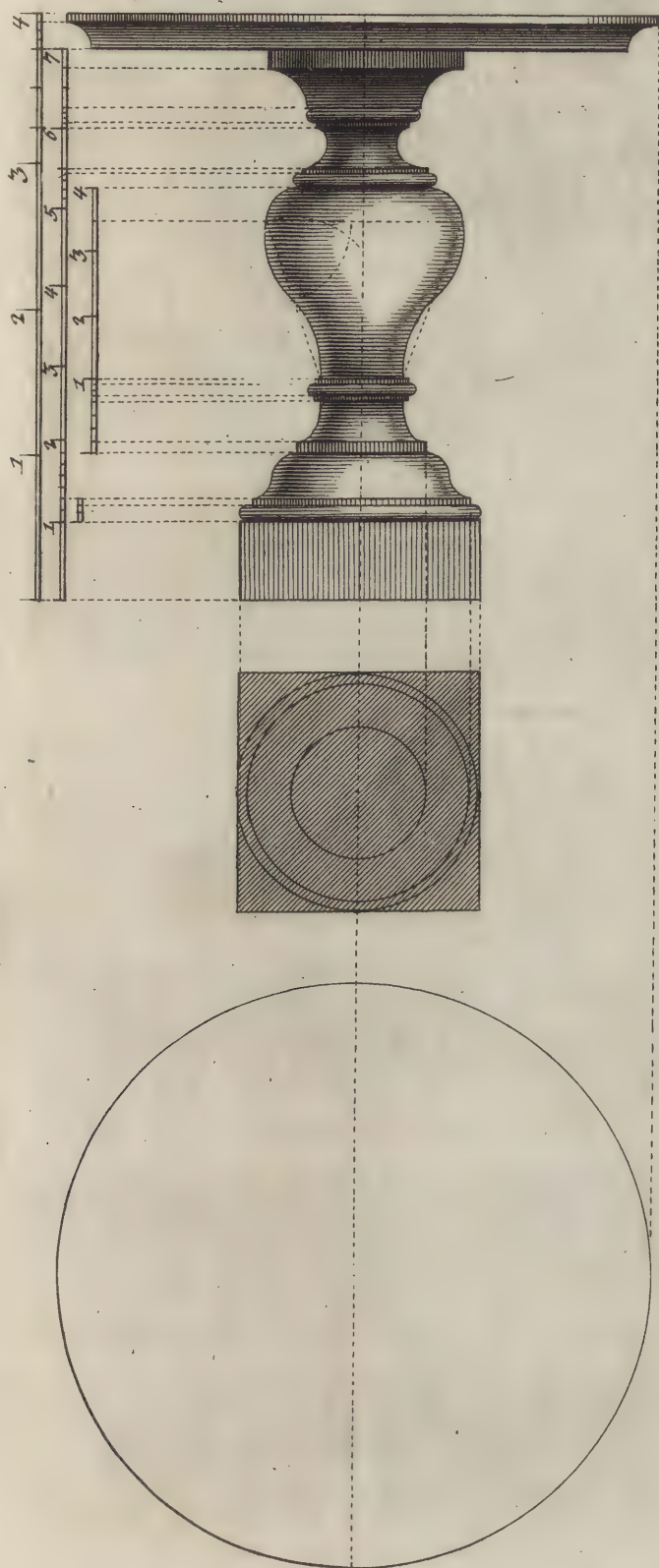




*Thos Langley Invent delin & Sculp 1739.*







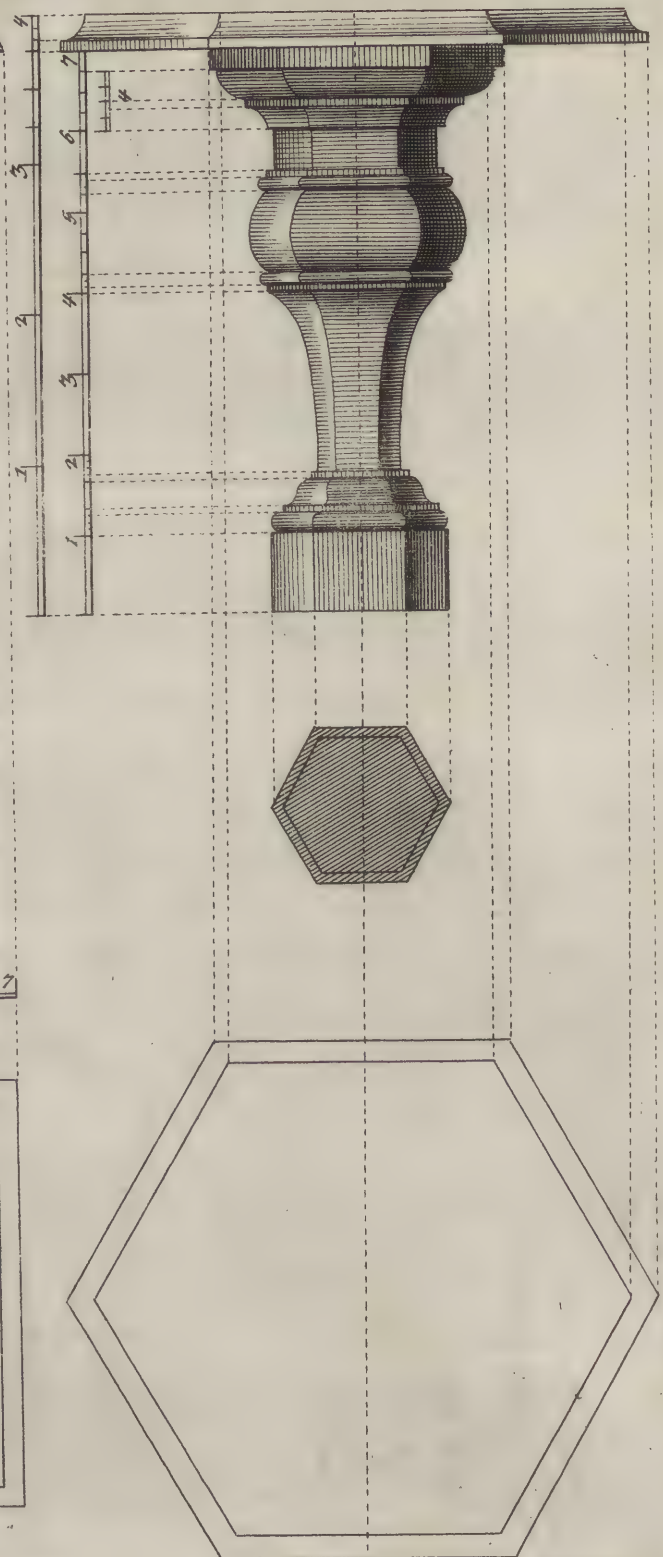
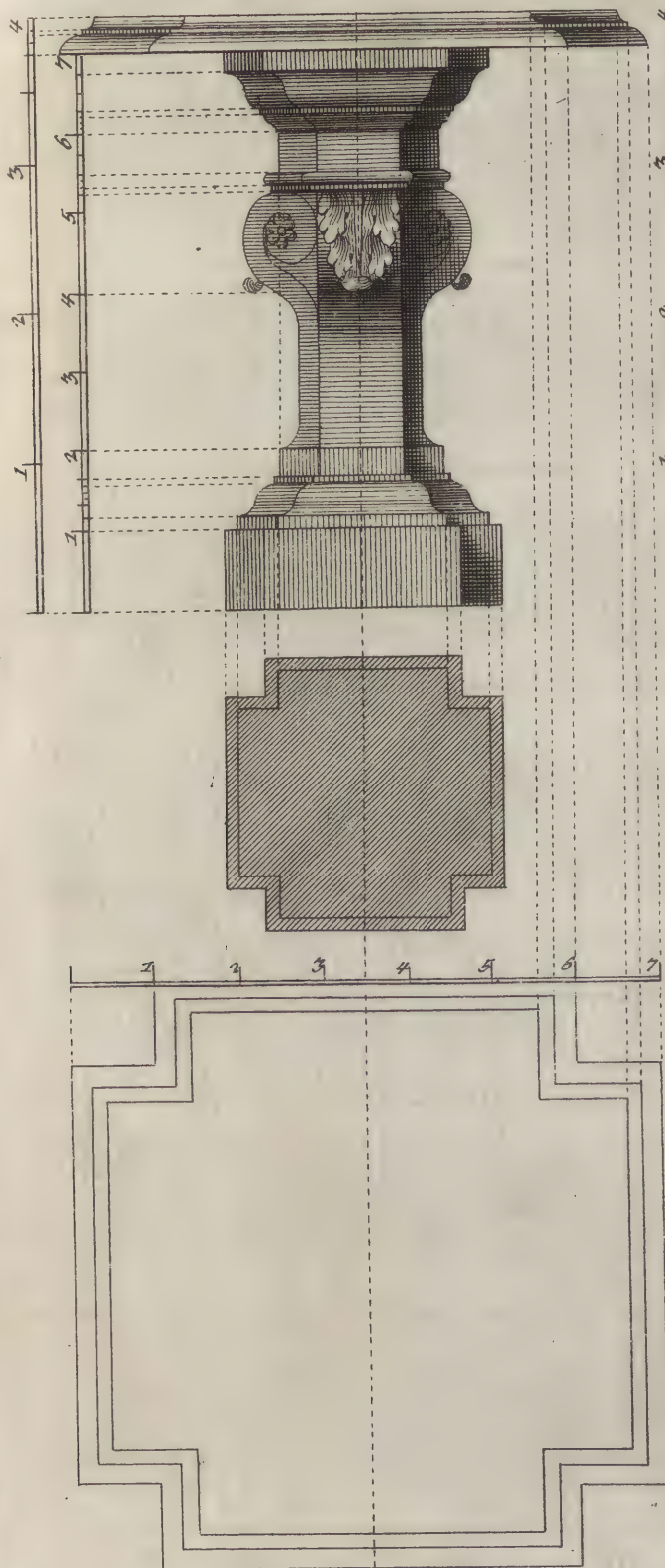
Baity Langley Invent 1739

Tho<sup>s</sup> Langley Sculp.



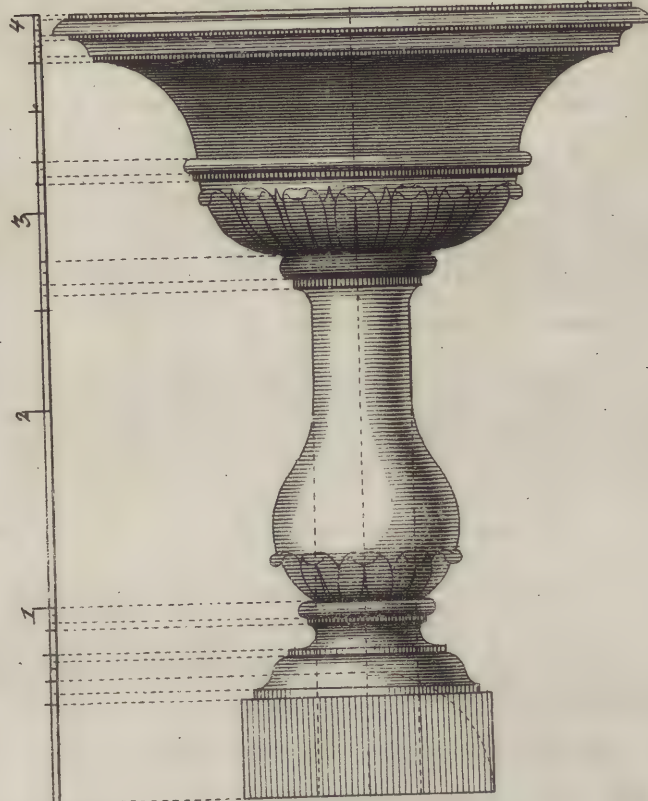
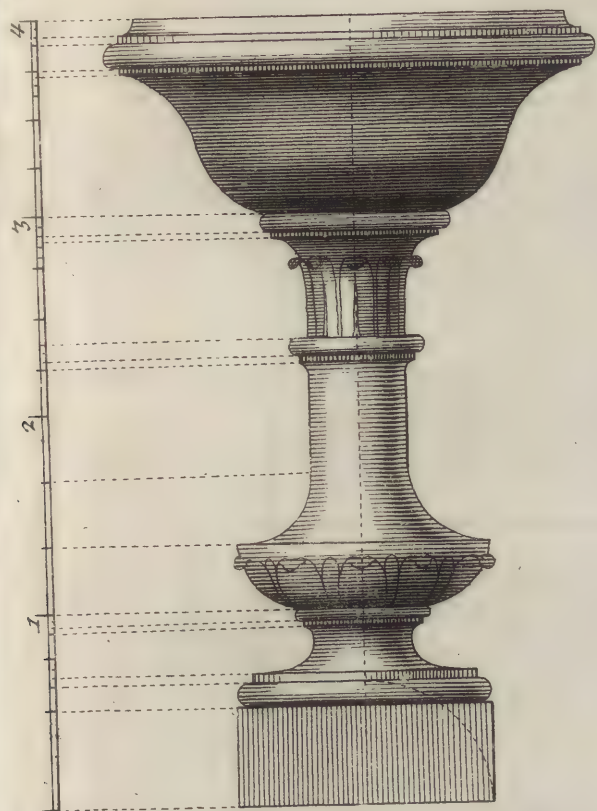
THE HISTORY OF THE  
CITY OF LONDON



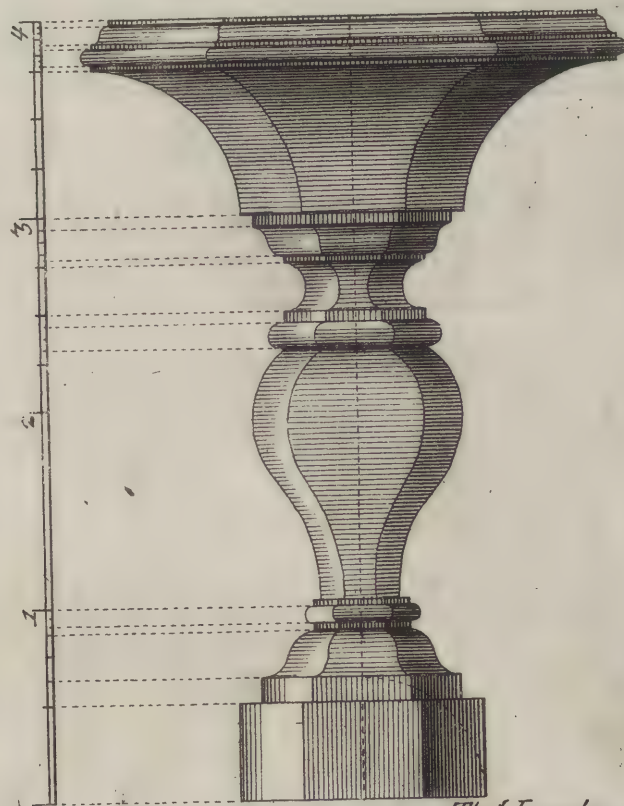
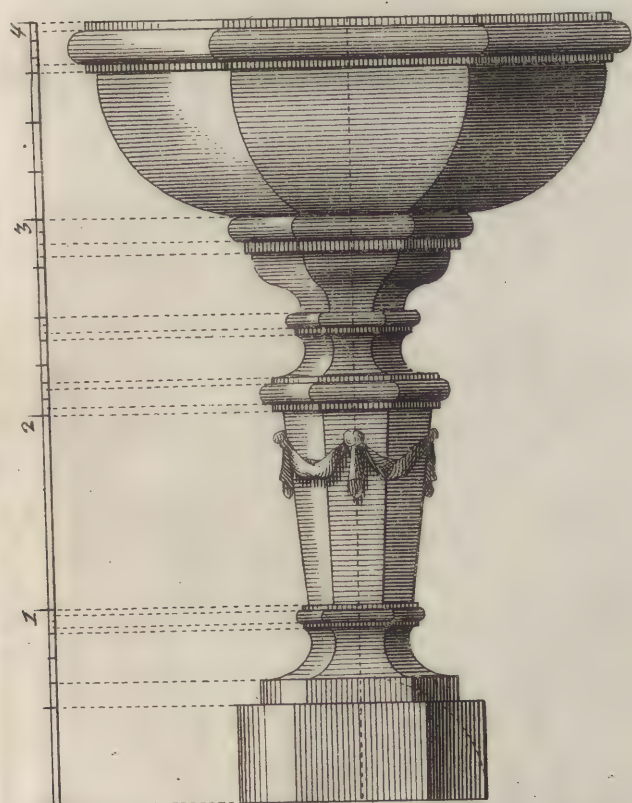








Fonts for Churches



Batty Langley Invent & delin 1739

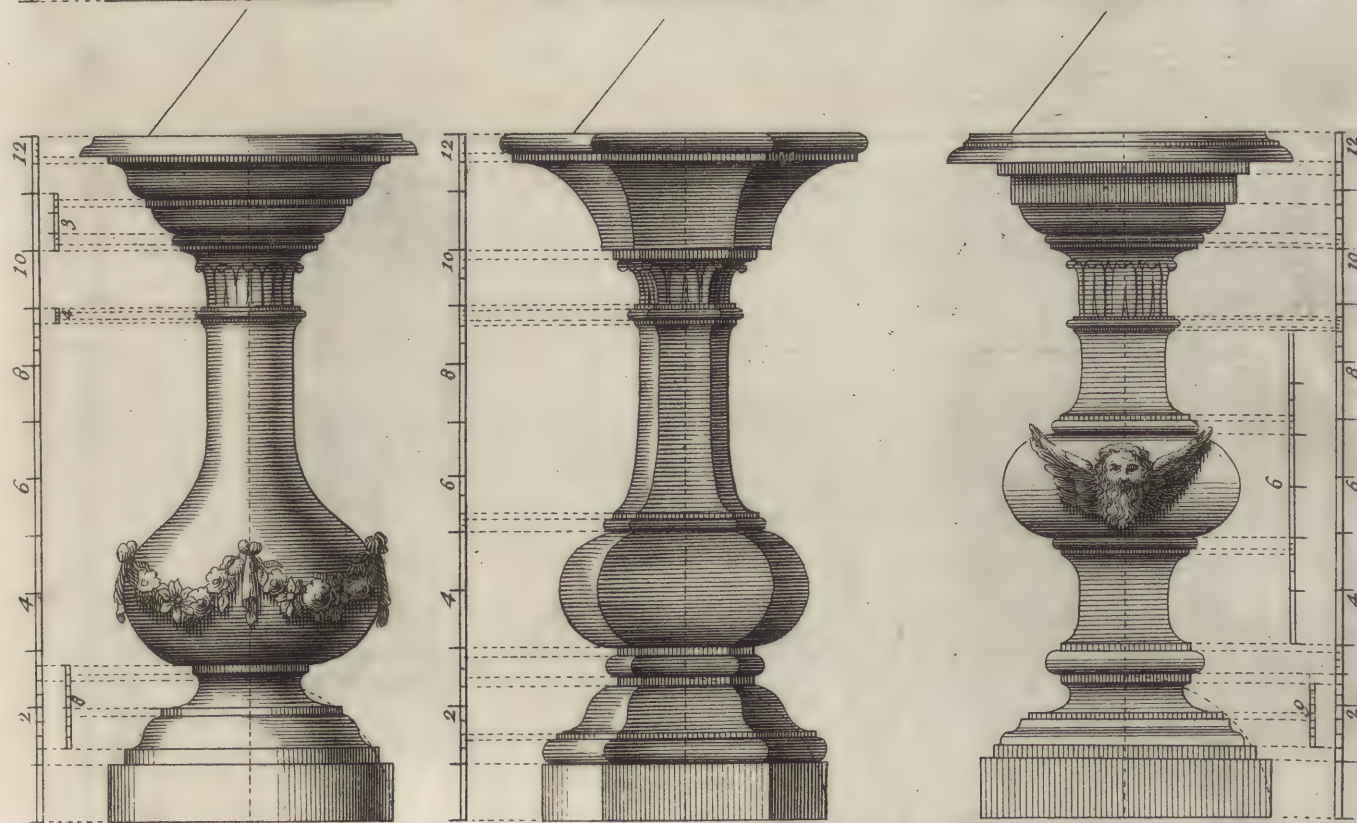
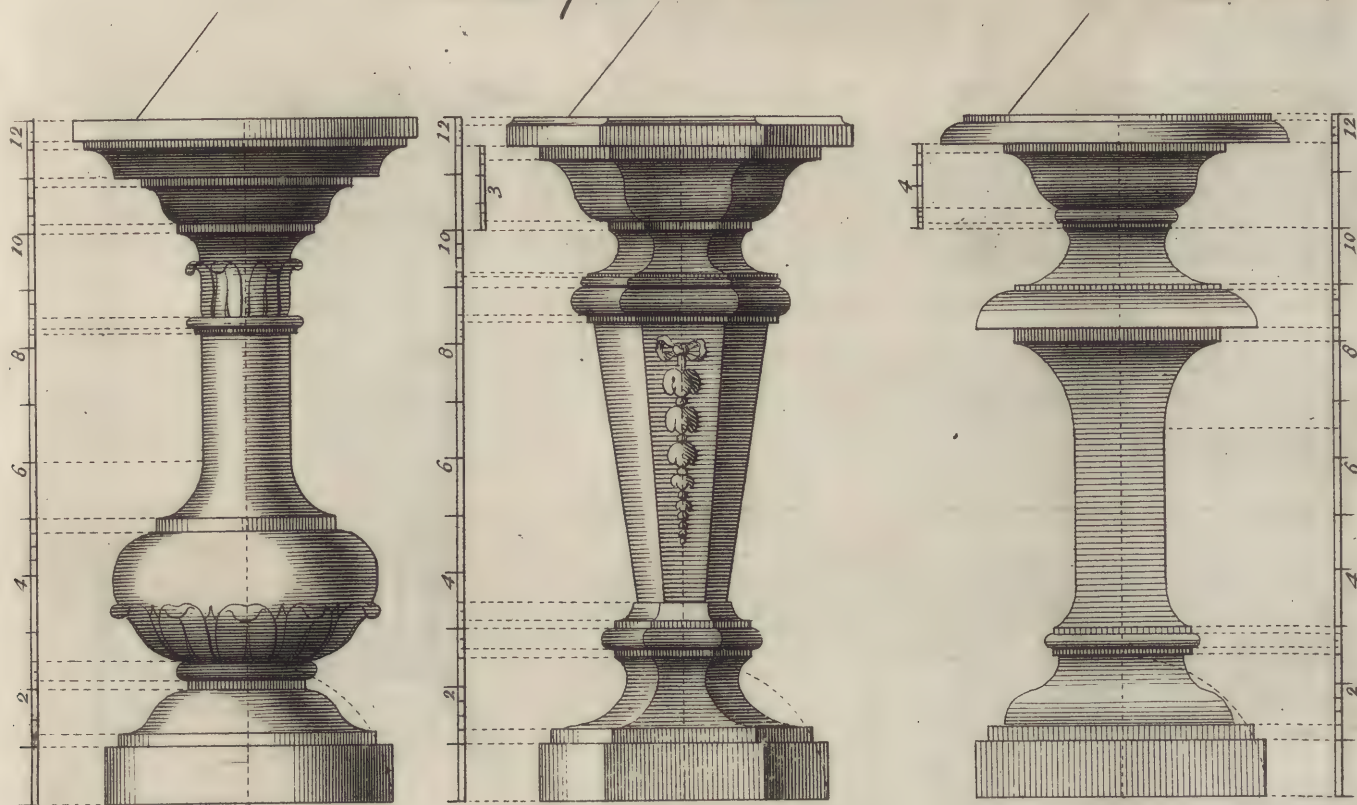
Tho<sup>s</sup> Langley Sulp





*Pedestals for Sun Dials.*

*Plate CLI.*



*Batty Langley Invent and Delin. 1739.*

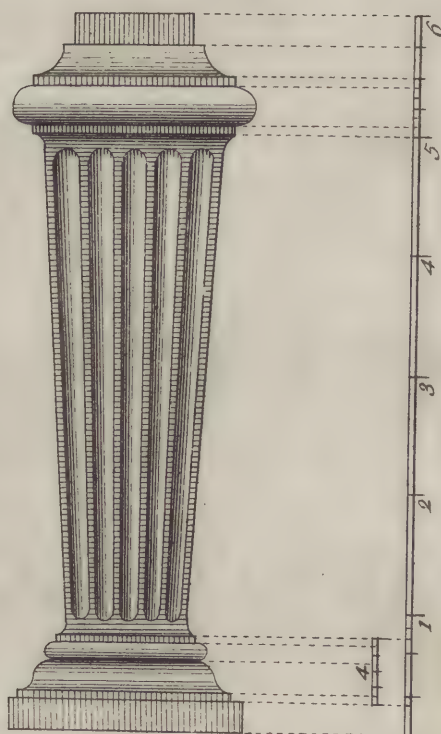
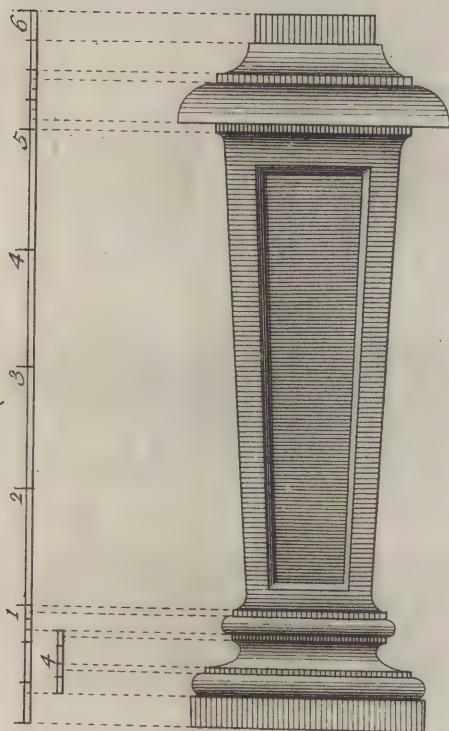
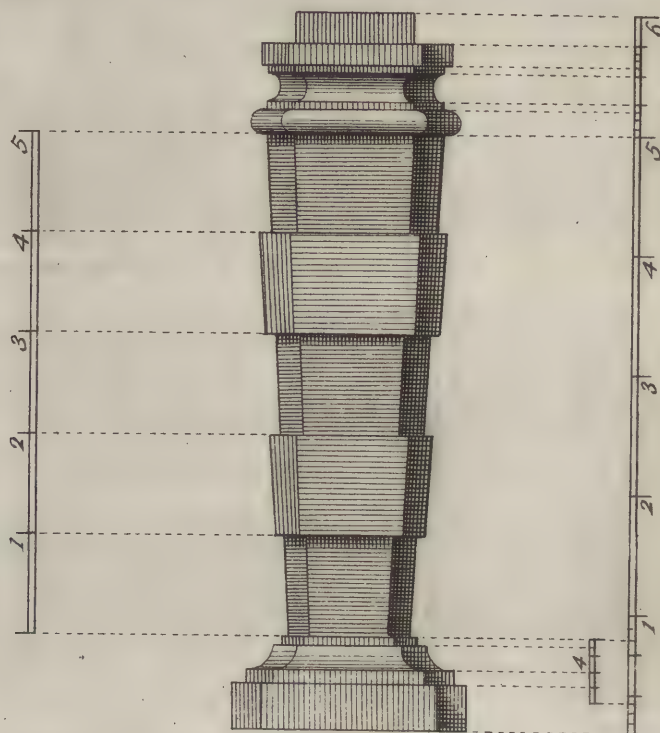
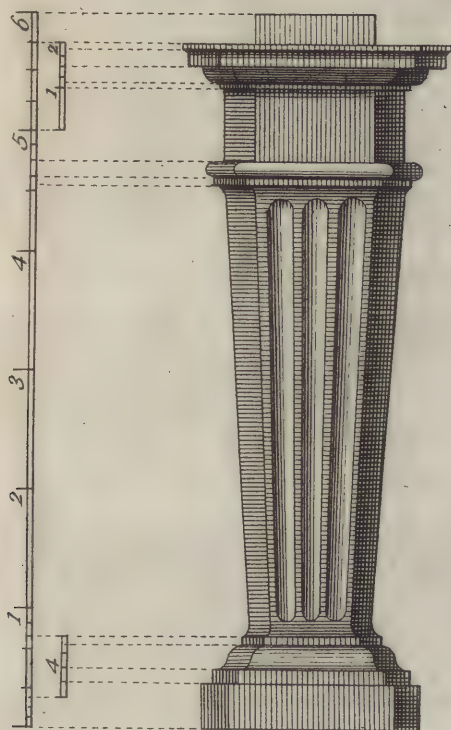
*Tho<sup>d</sup>. Langley Sculp.*





Pedestals for Busts

Plate CLII.



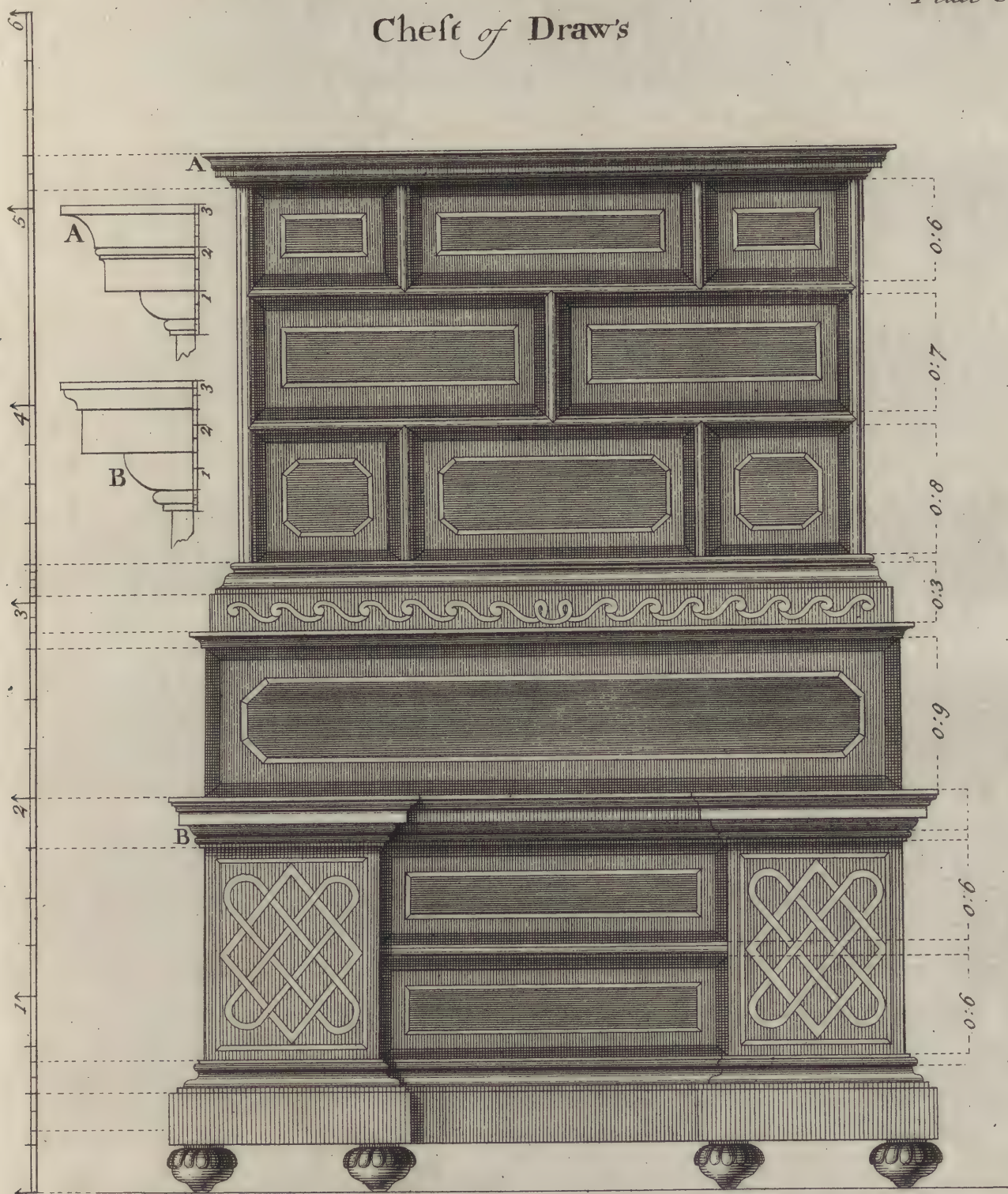
Batty Langley Invent and Delin. 1739.

Tho.<sup>s</sup> Langley Sculp.





Chest of Draw's





1881

1881

1881

1881

1881

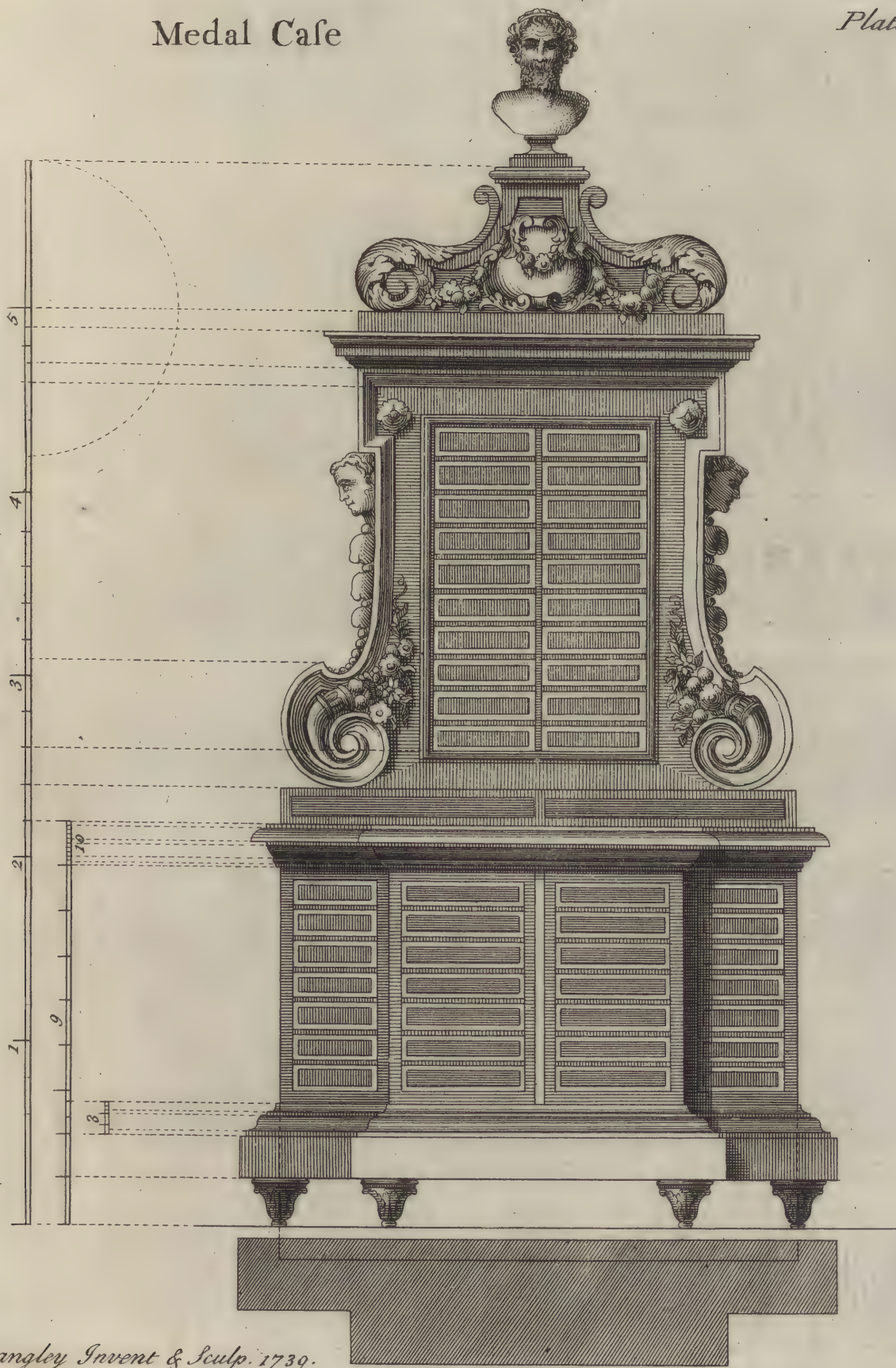
1881

1881

1881

Medal Case

Plate CLIV.



*T. Langley Invent & Sculp. 1739.*





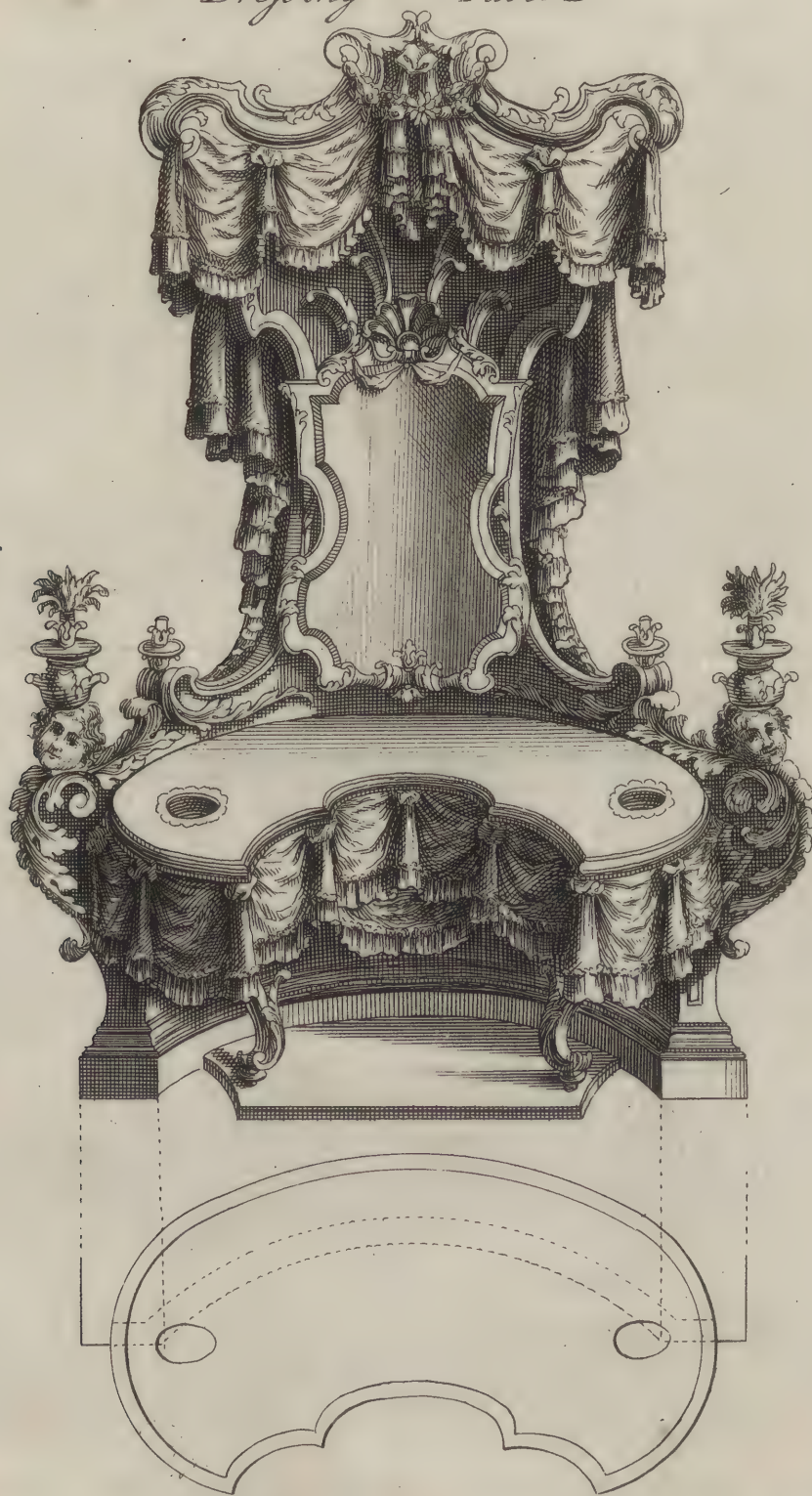






*Dressing — Table —*

*Plate CLVI.*



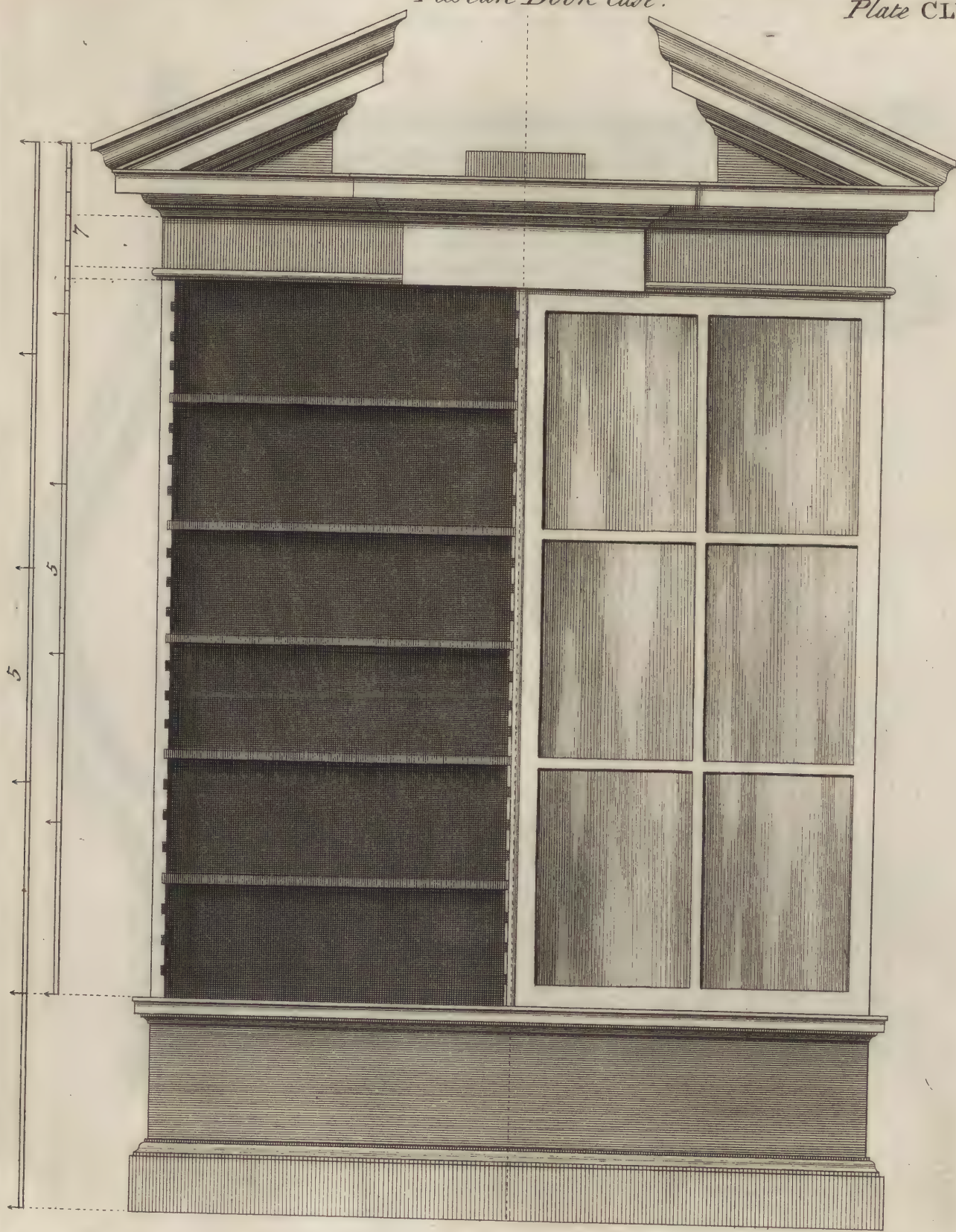
*T. Langley Sculp.*





*Tuscan Book Case.*

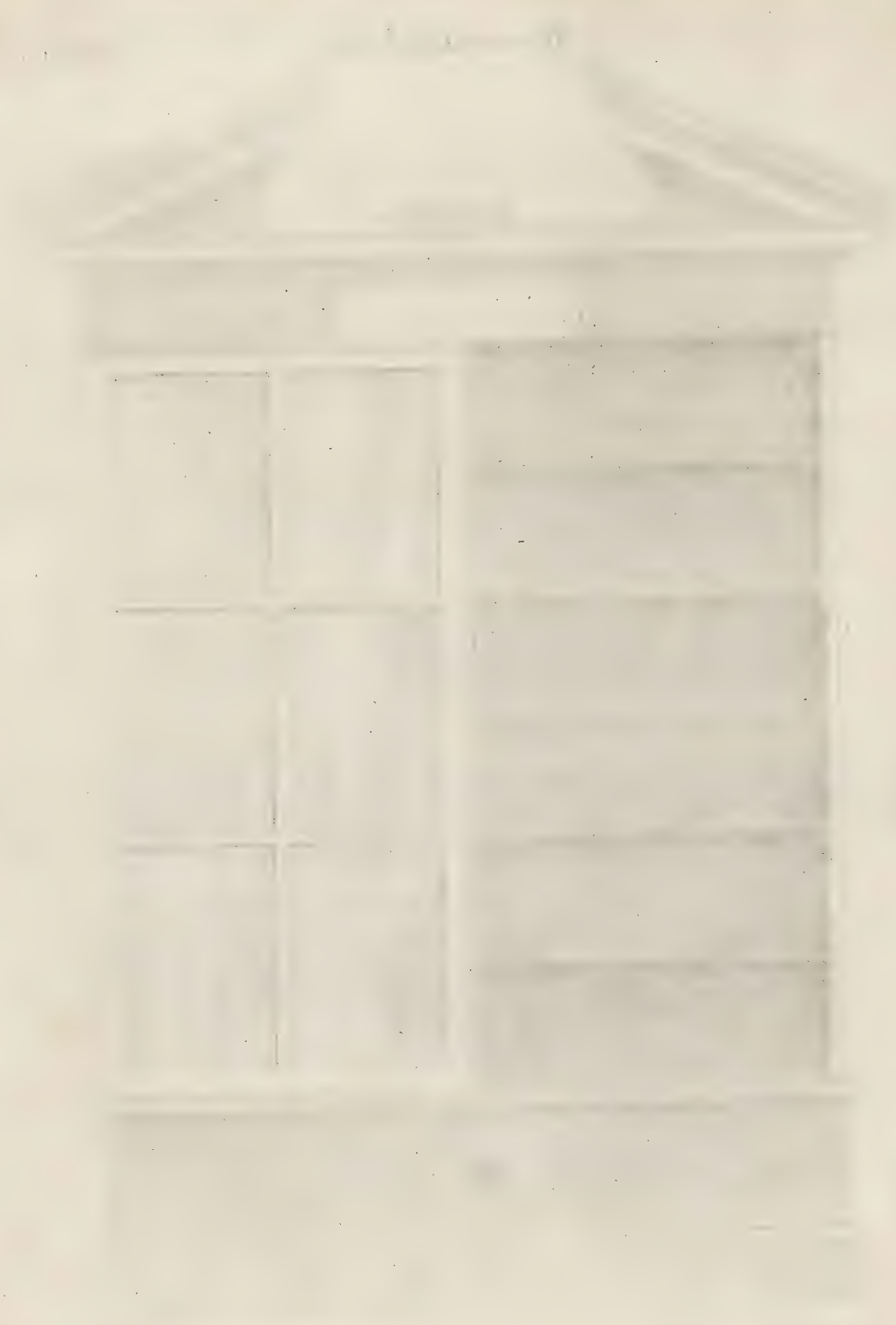
*Plate CLVII.*



*Batty Langley Invent 1739.*

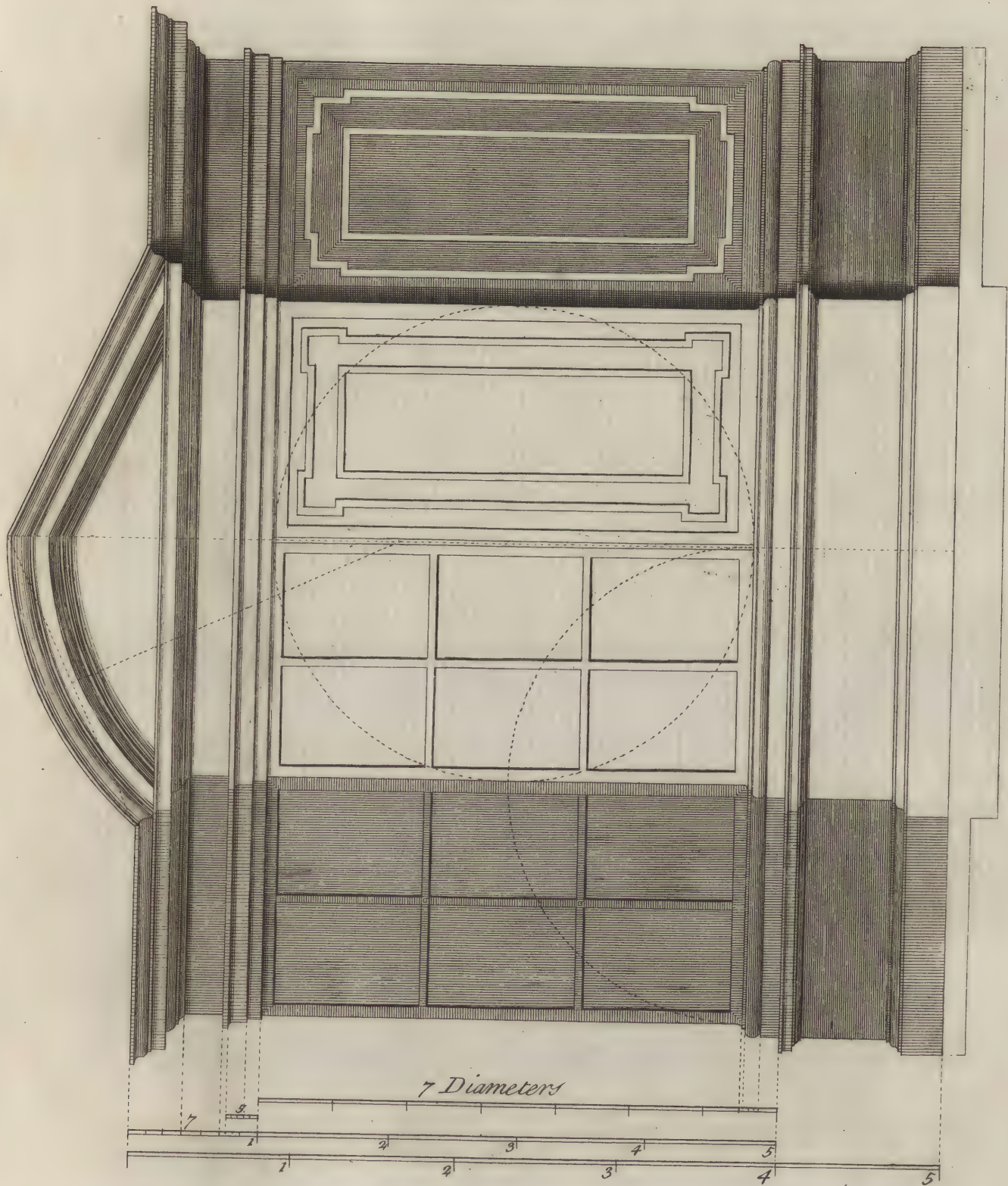
*Tho<sup>d</sup>. Langley Sculp.*





*Tuscan Book Case.*

*Plate CLVIII.*



*Batty Langley Invent. 1739.*

*Tho.<sup>d</sup> Langley Sculp.*

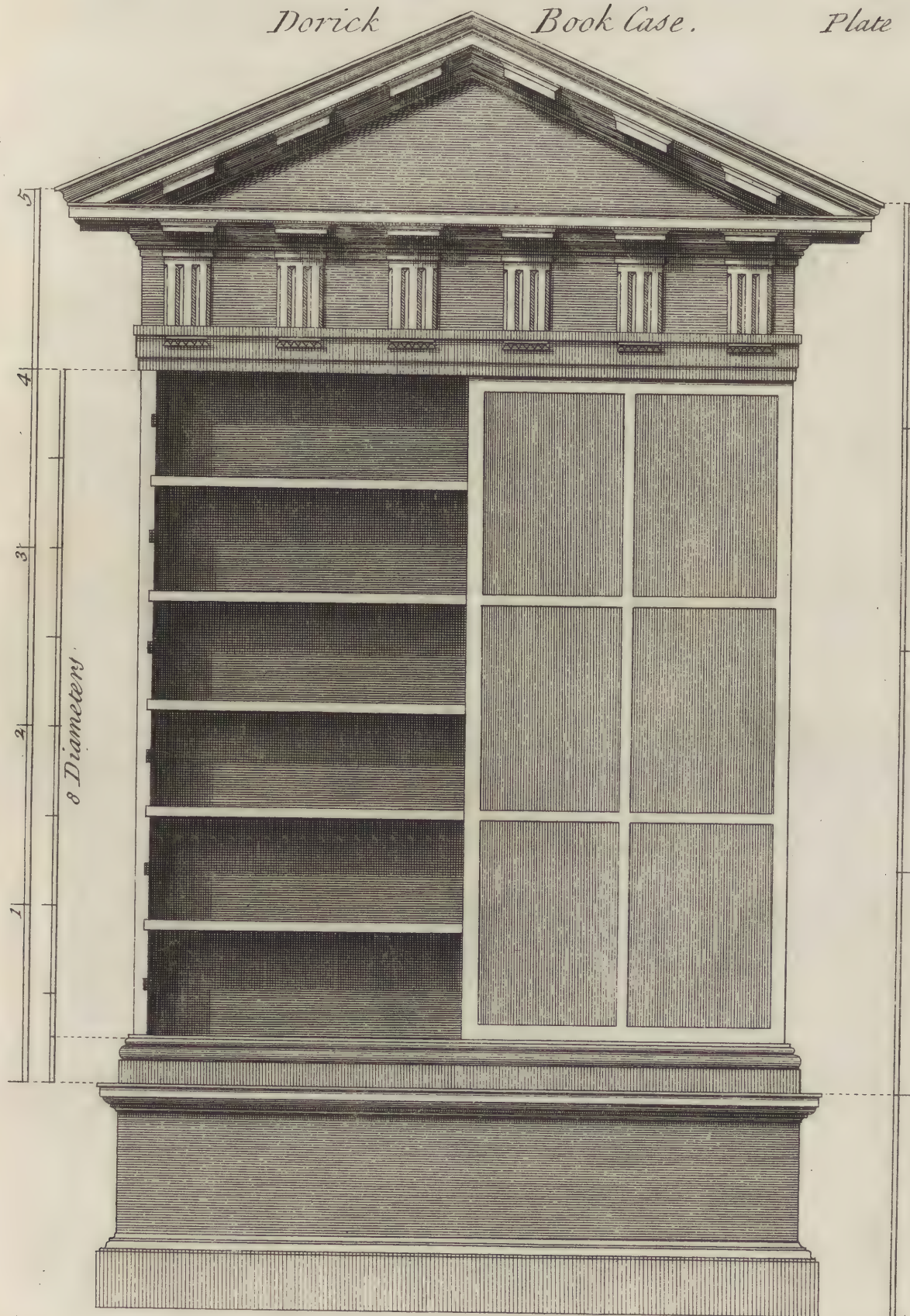




*Dorick*

*Book Case.*

*Plate CLIX.*



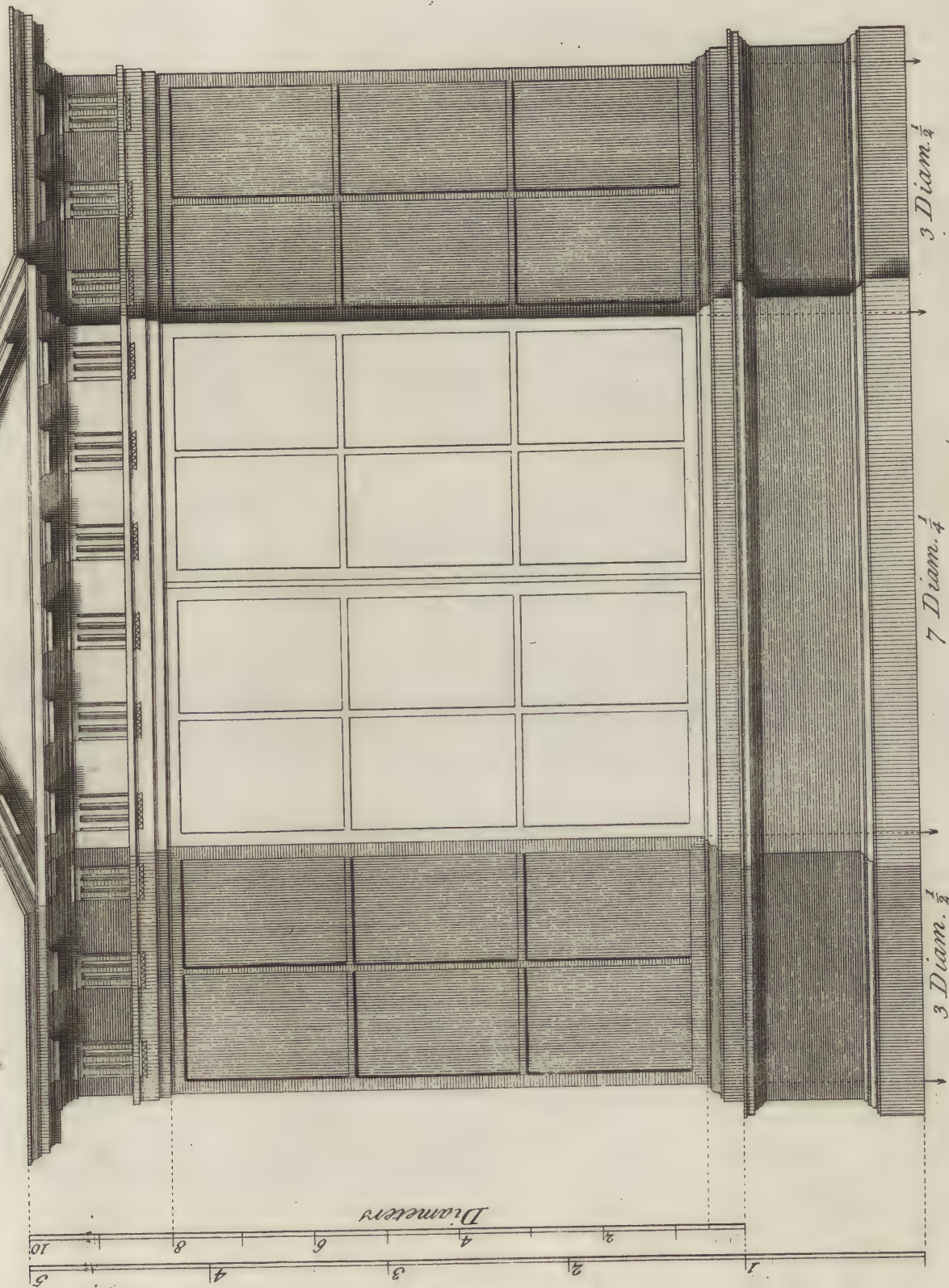
*Batty Langley Invent. 1739.*

*T. Langley Sculp.*





Dorick Book Case



Batty Langley Invent.

T. Langley Sculp.





*Ionick Book Case*

*Plate CLXI.*

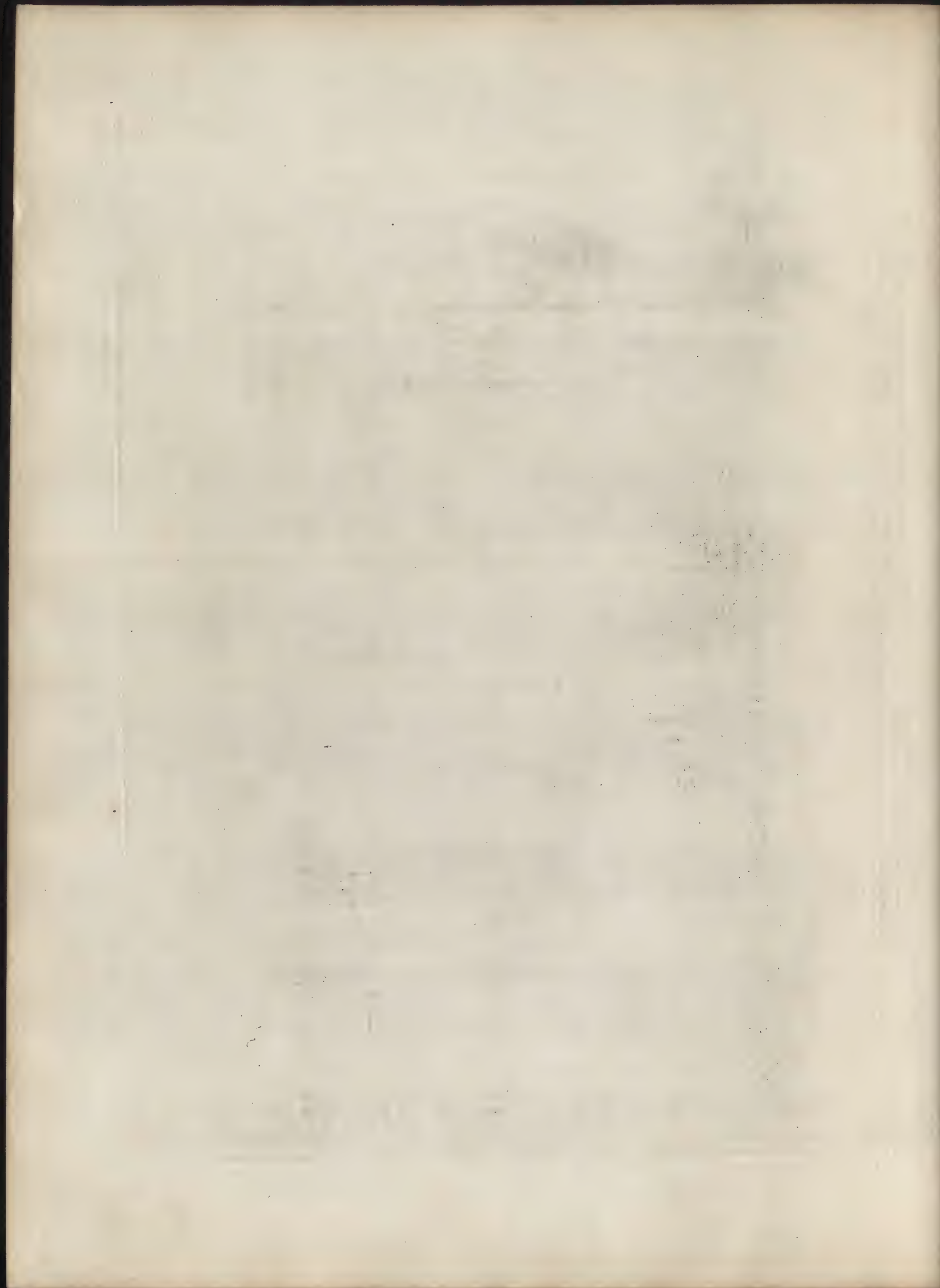


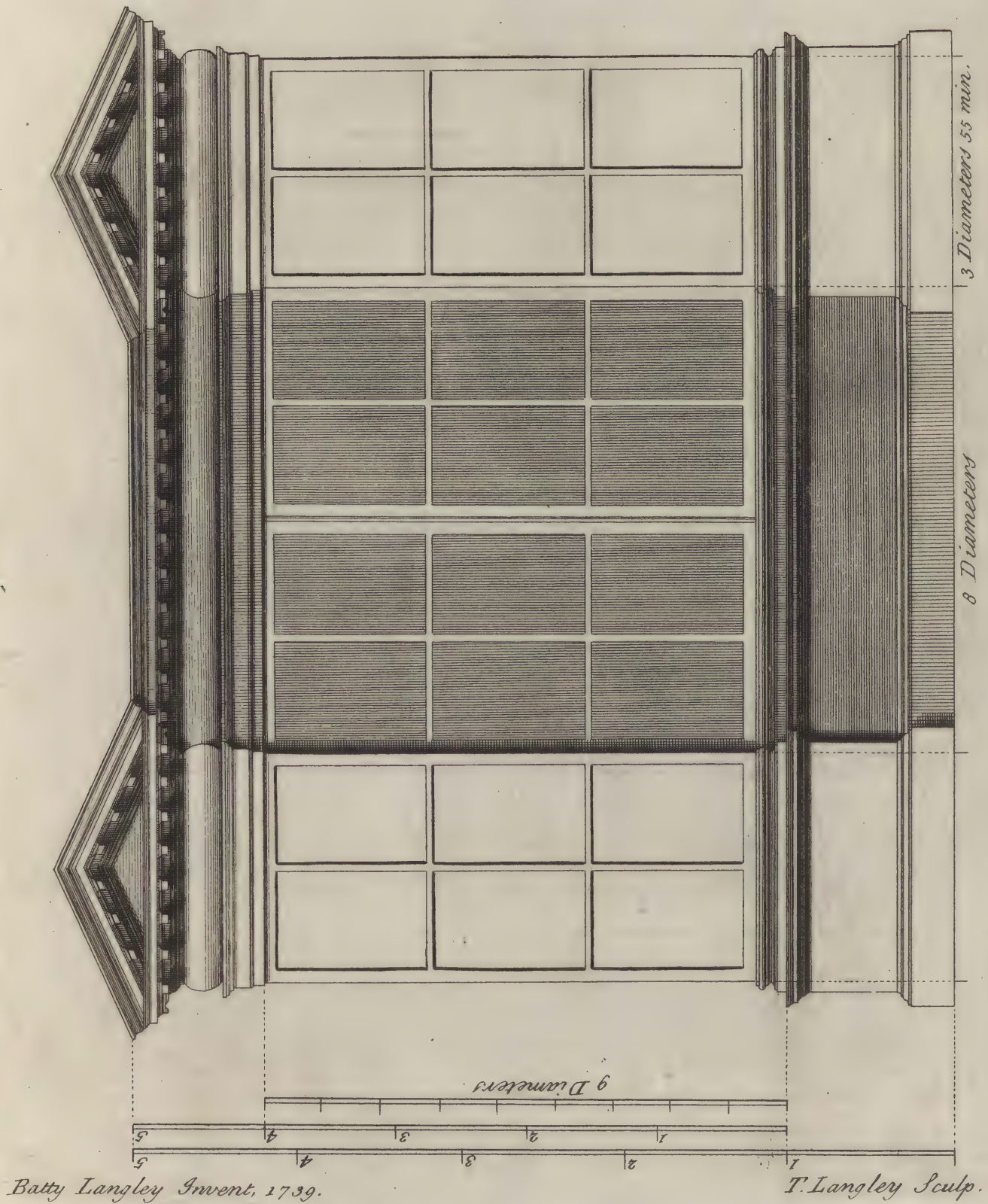
*Batty Langley Invent. 1739.*

*8 Diameters*

*T. Langley Sculp.*



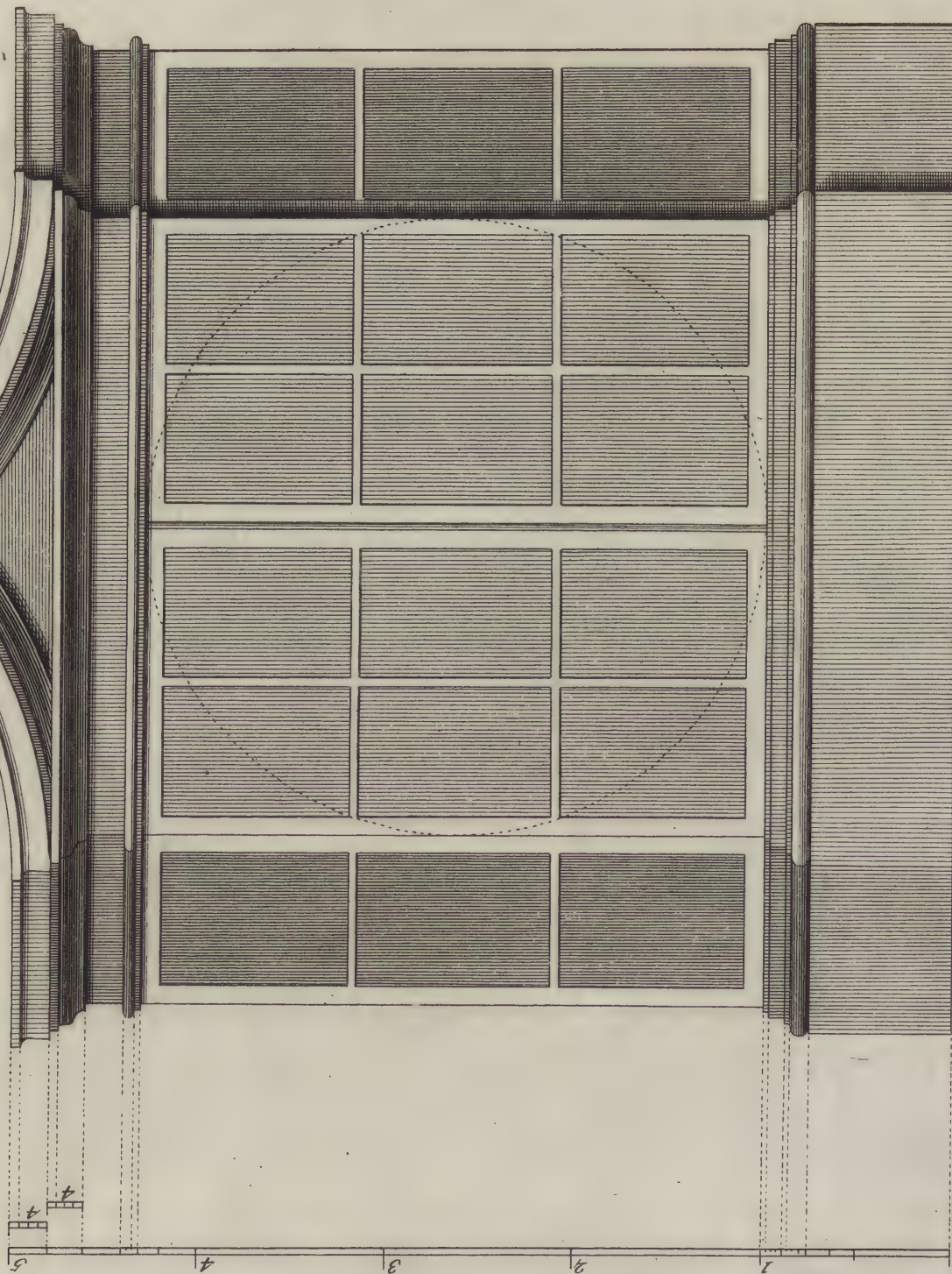








Book Case.

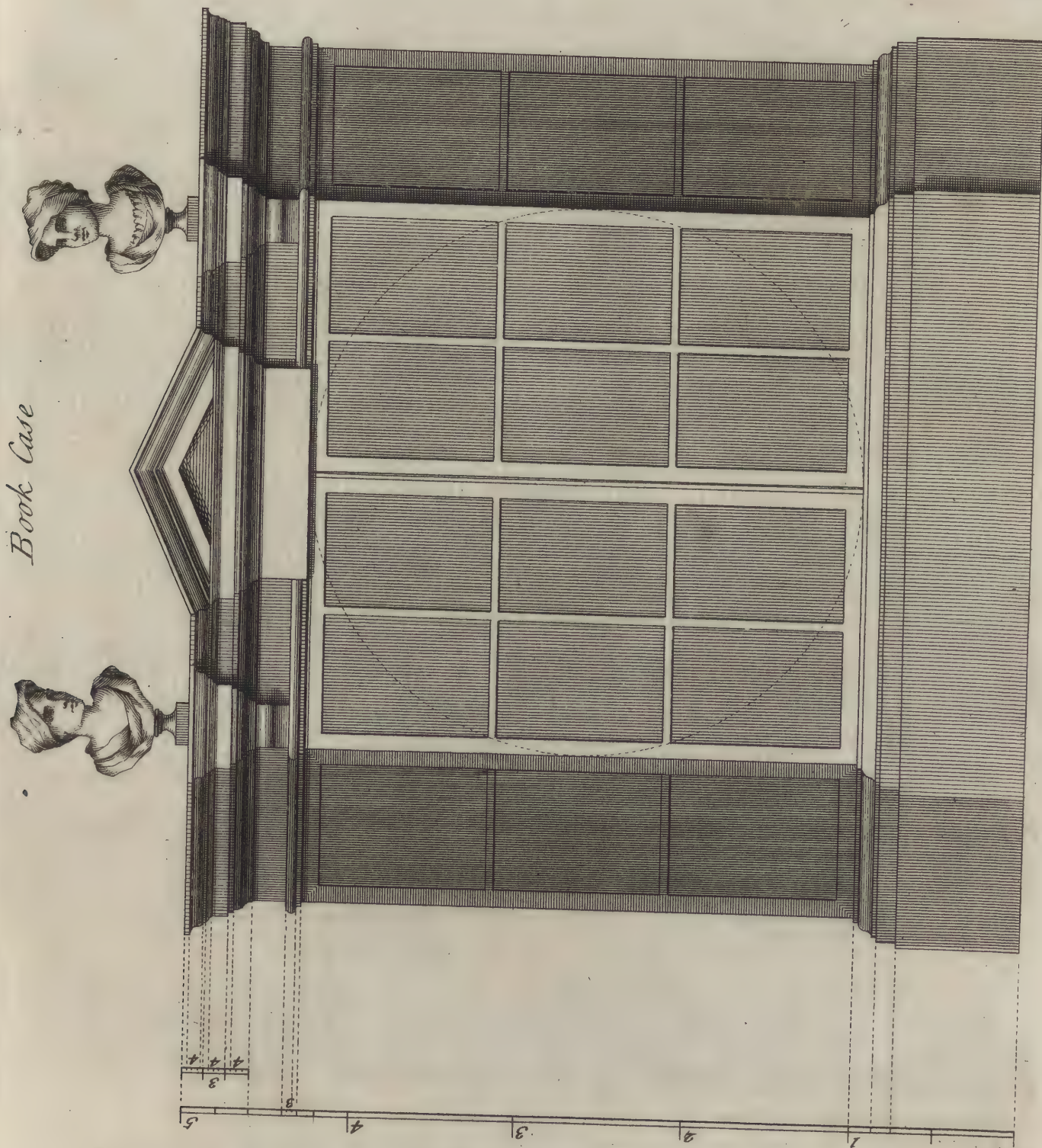


Batty Langley Invent 1739.

Tho.<sup>d</sup> Langley Sculp.





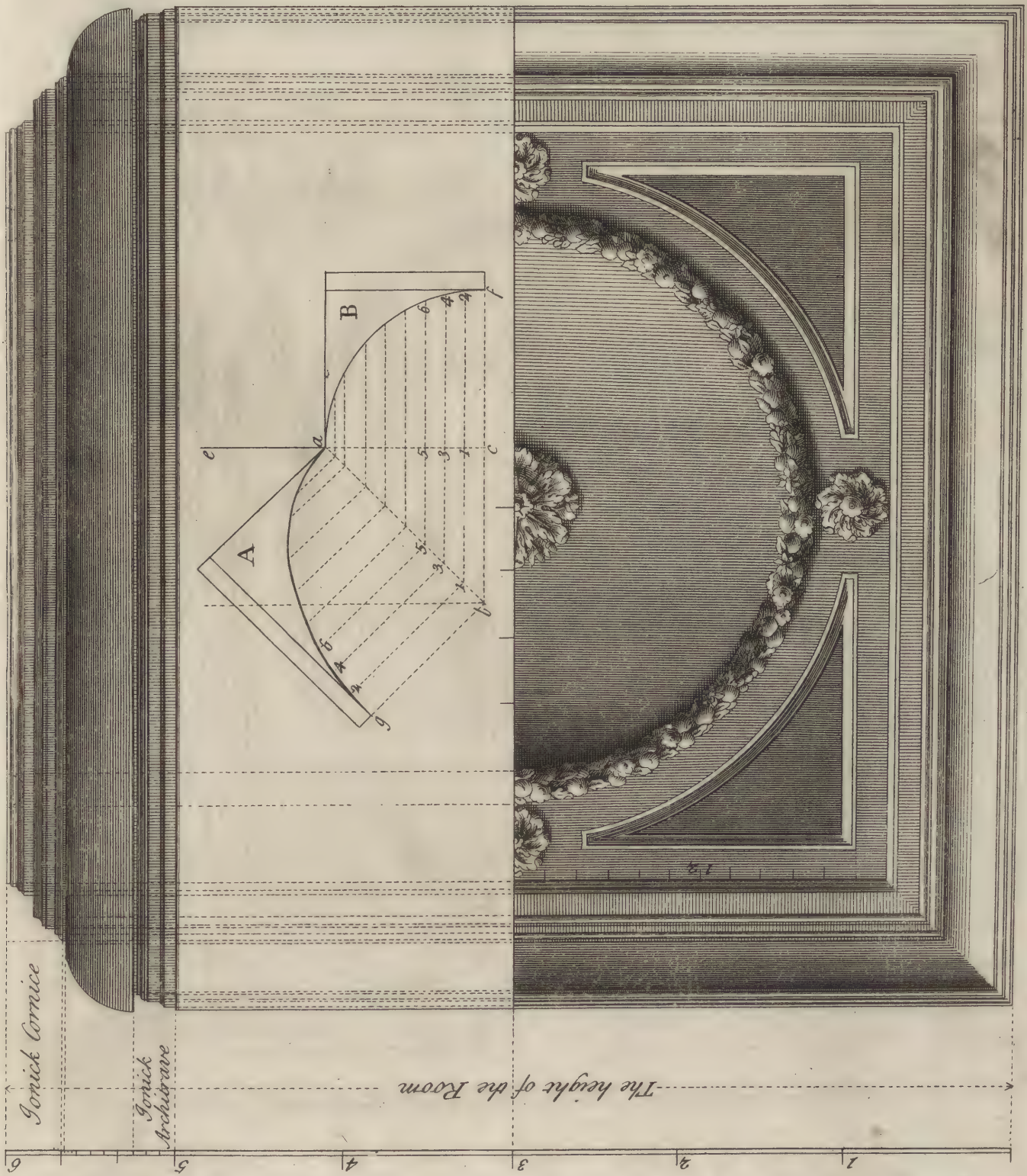


Batty Langley Invent 1739.

Tho<sup>d</sup>. Langley Sculp.

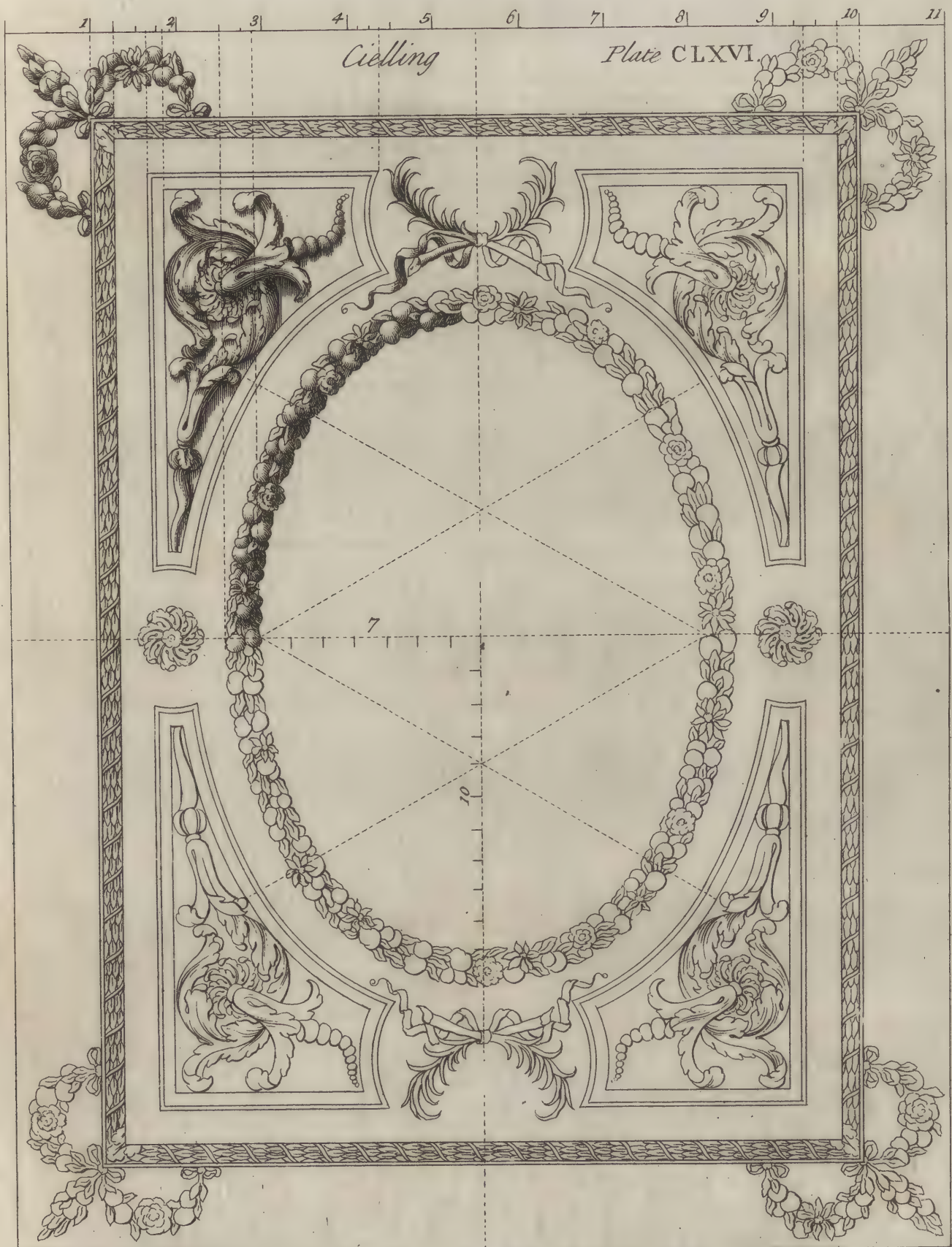












Batty Langley Invent 1739.

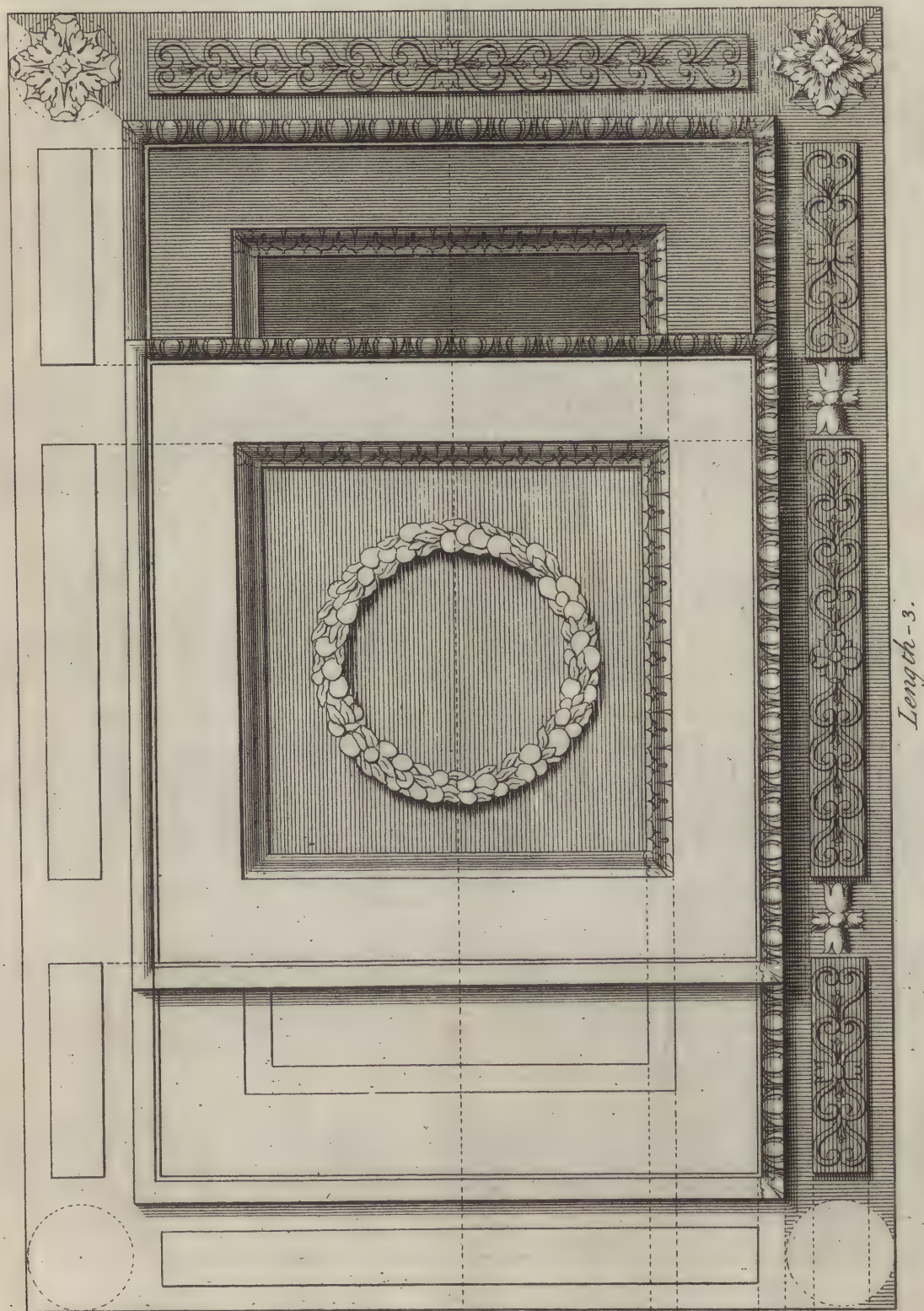
T. Langley Sculp.





*Cielling.*

*Plate CLXVII.*



*Length-3.*

*Breadth-2.*

*Batty Langley Invent 1739.*

1

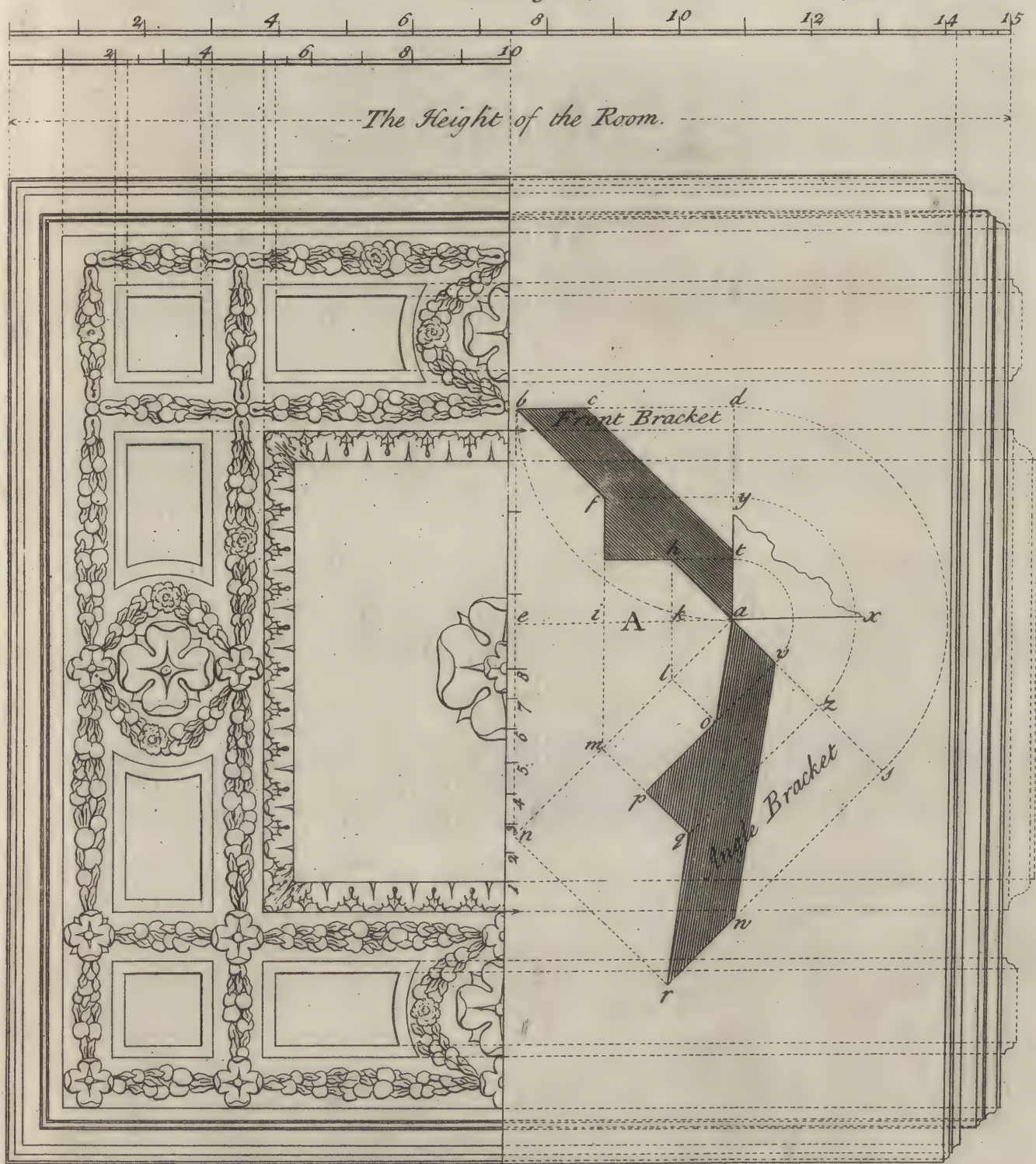
2

3

*T. Langley Sculp.*

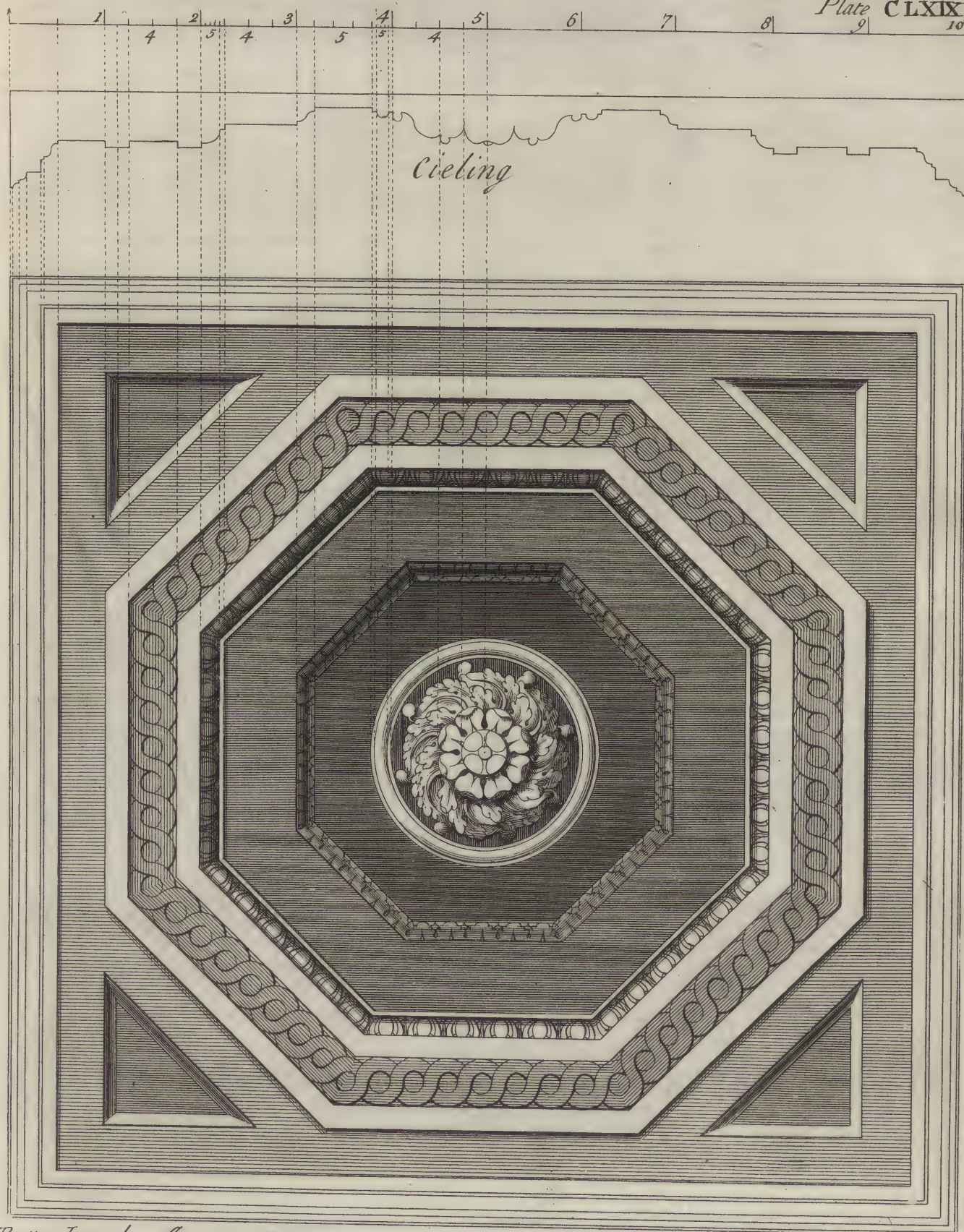












Batty Langley Invent 1739.

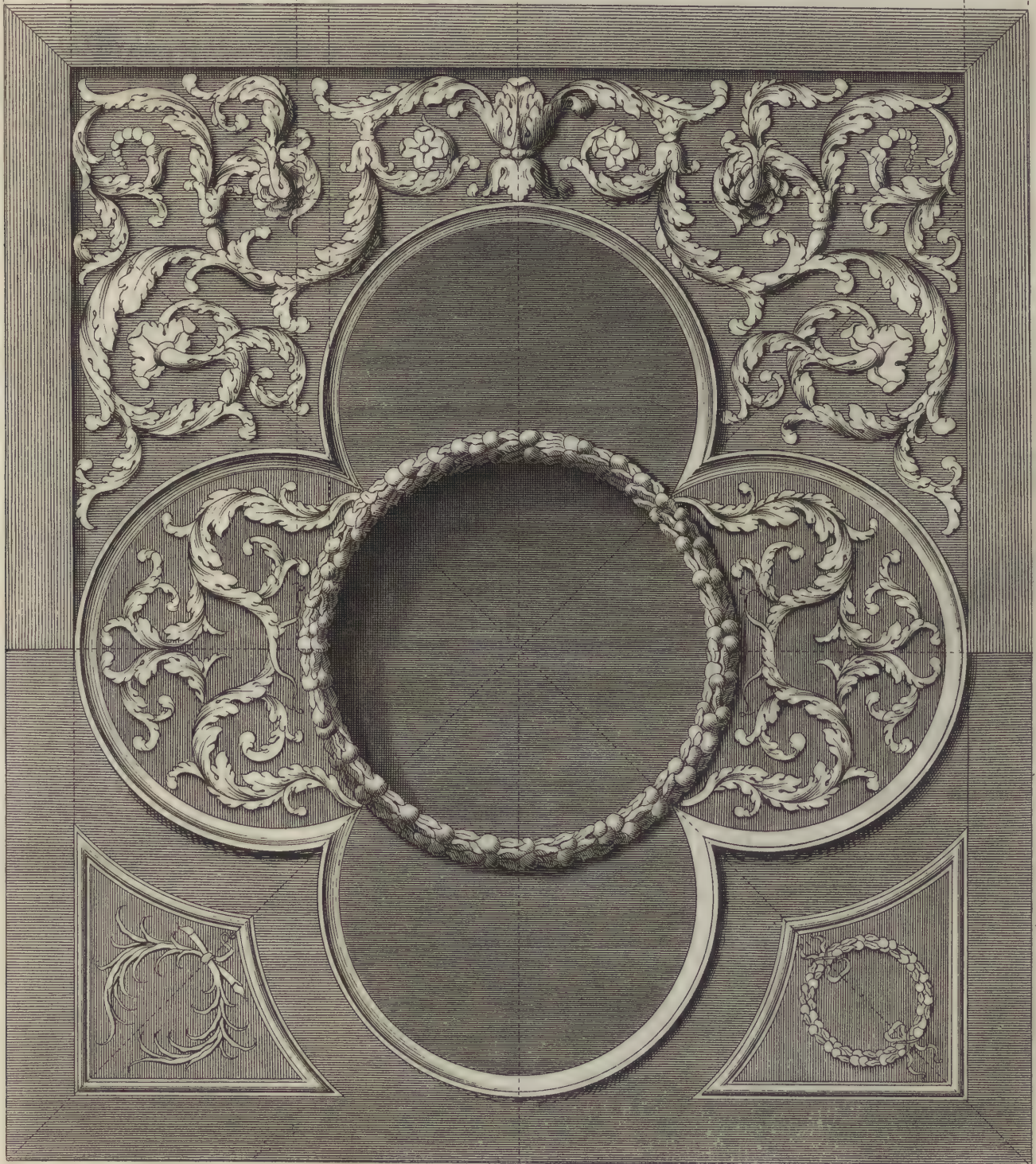
Tho<sup>d</sup> Langley Sculp.





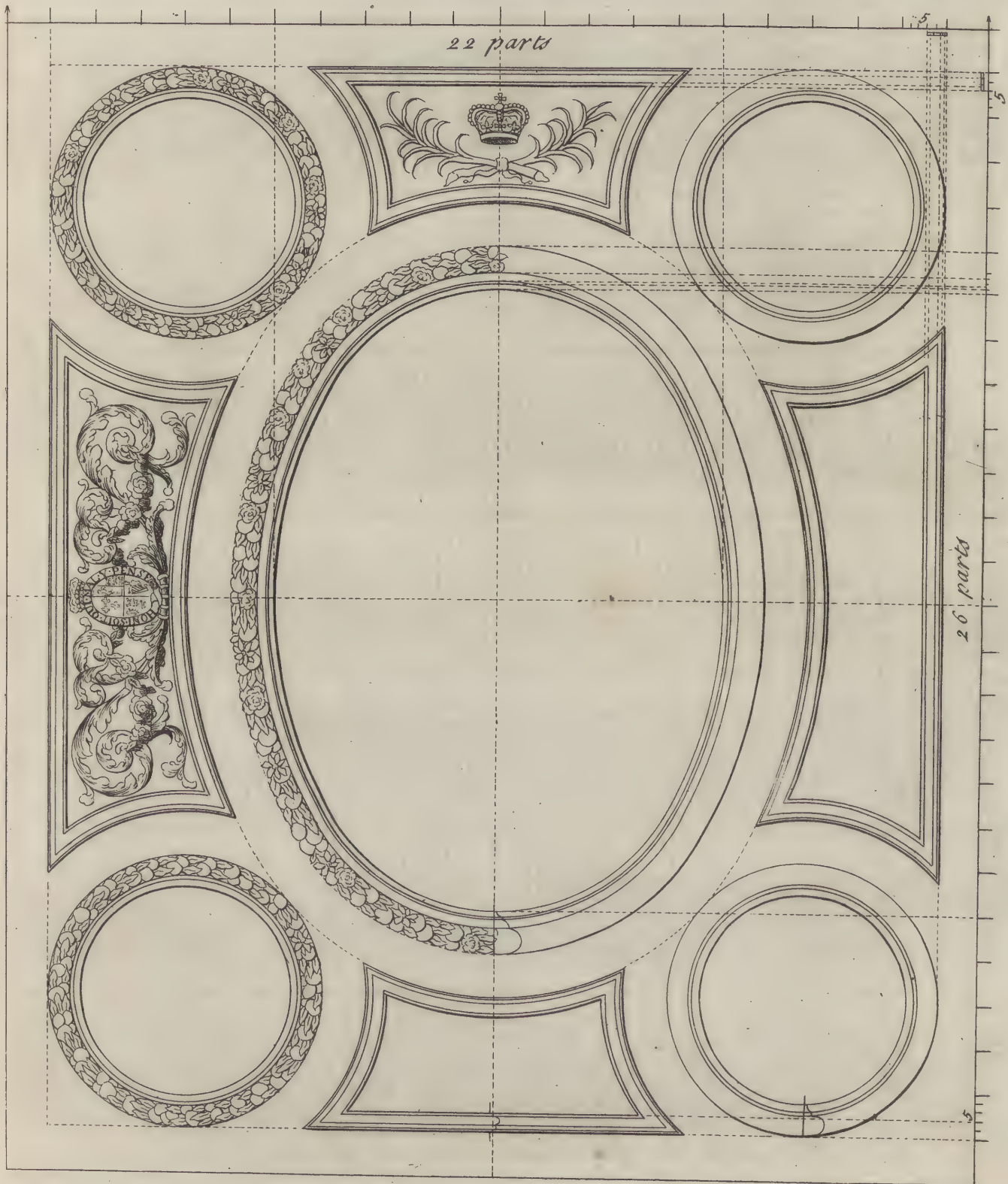


*16 parts*

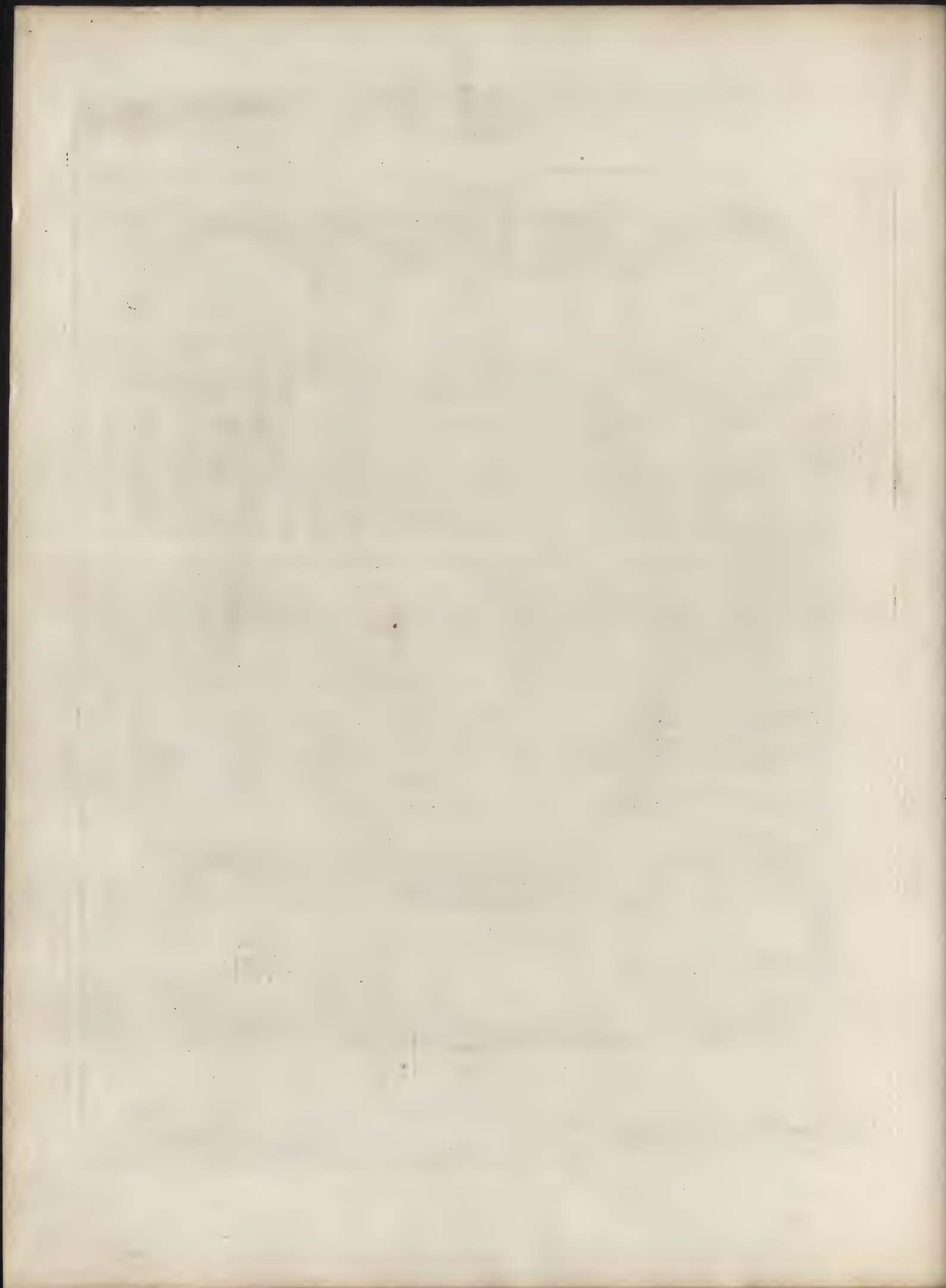






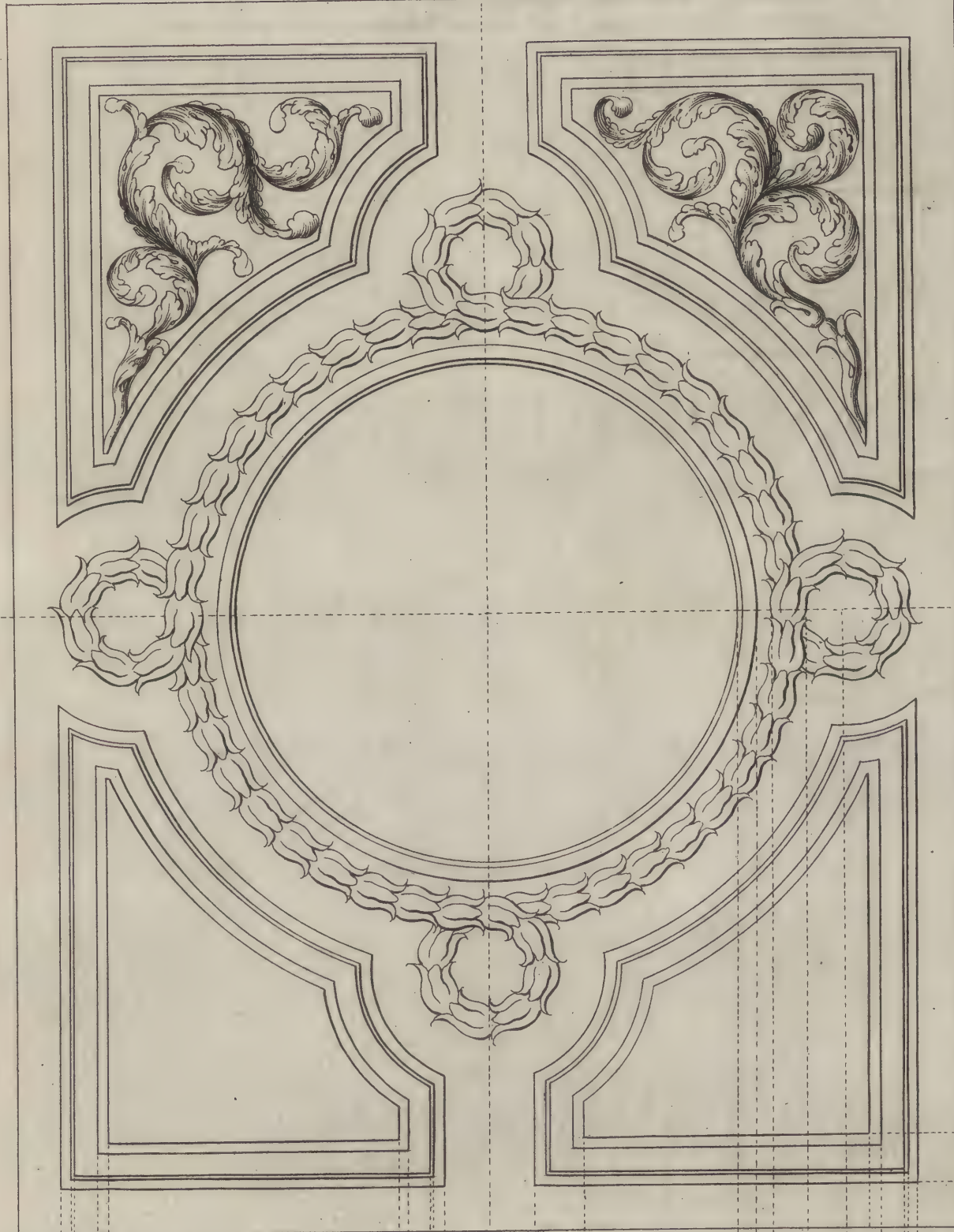






*Cieling*

*Plate CLXXII.*



*28 Parts*

*Batty Langley Invent 1739.*

*22 Parts*

*T. Langley Sculp.*

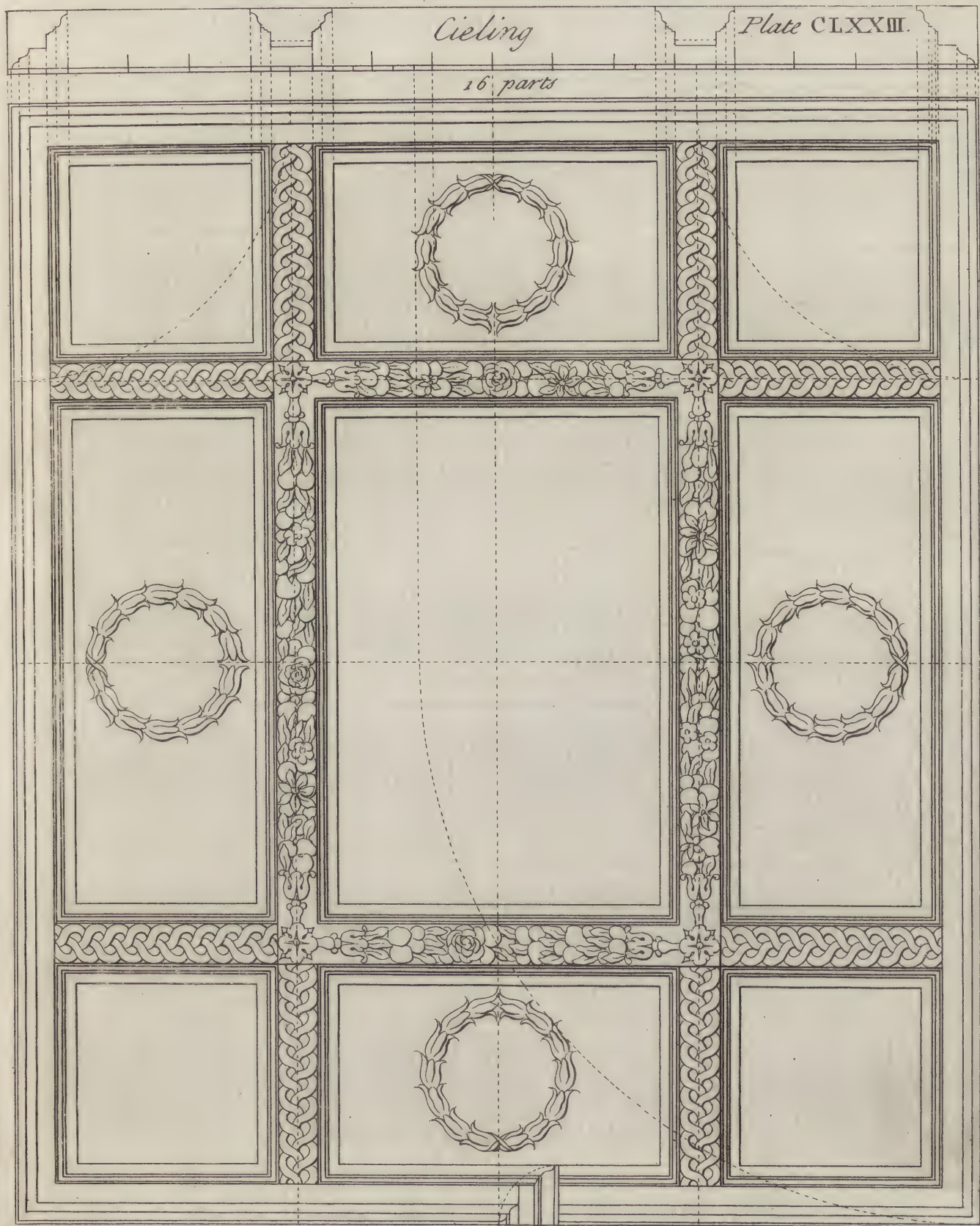




*Cieling*

*Plate CLXXIII.*

*16 parts*



*Batty Langley Invent. 1739.*

*Tho.<sup>d</sup> Langley Sculp.*

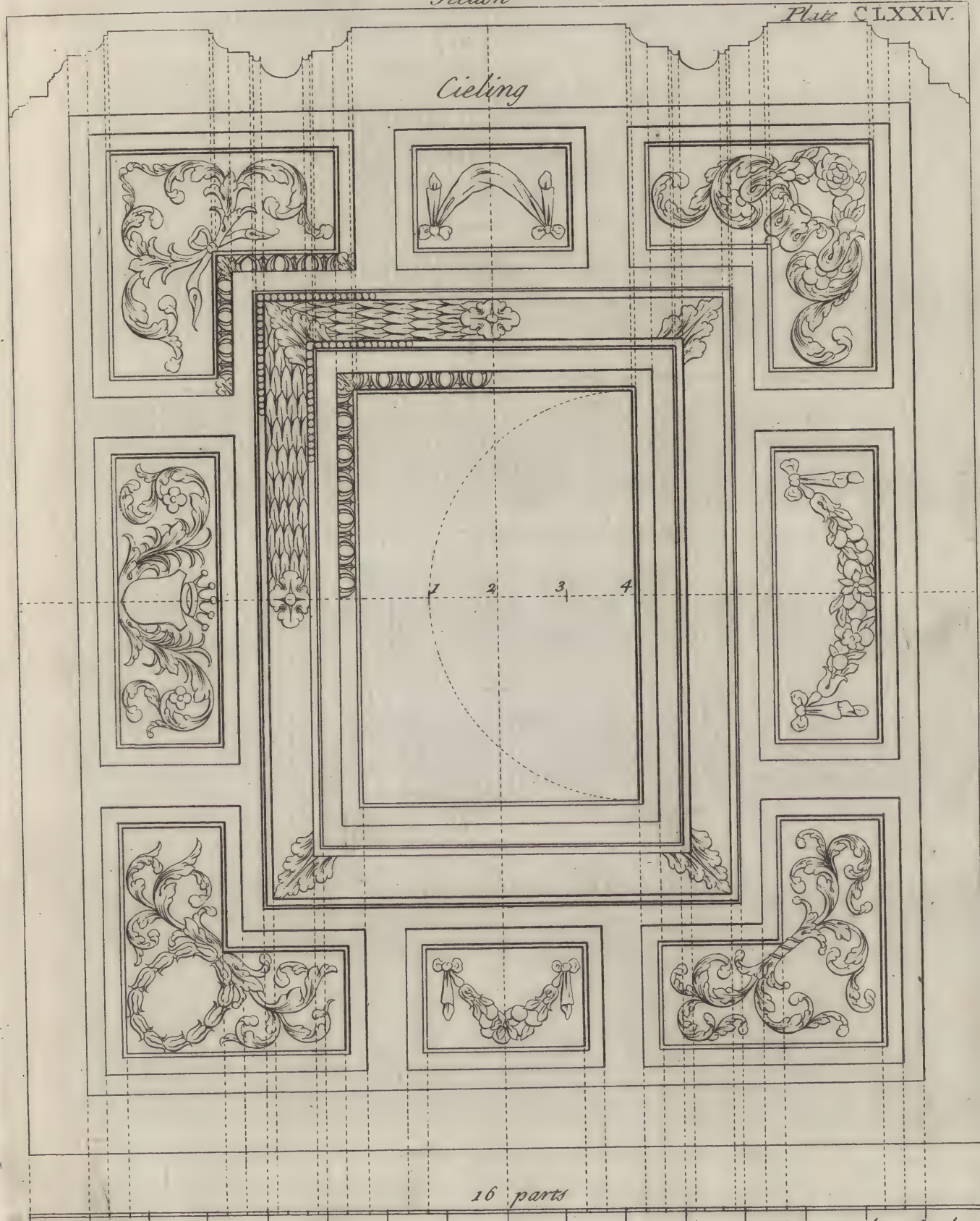




Section

Plate CLXXIV.

Cieling



Batty Langley Invent 1739.

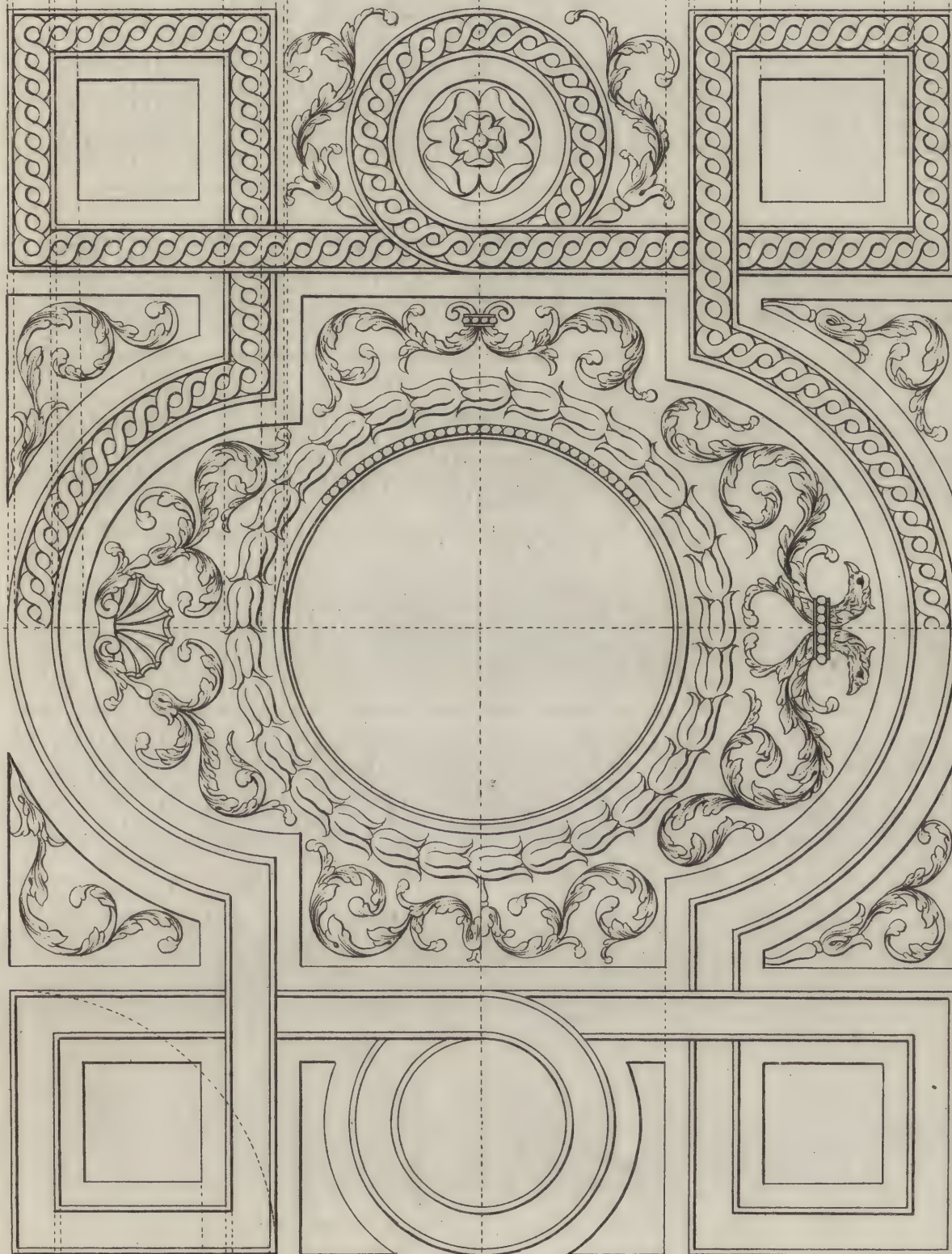
Tho: Langley Sculp.





*Cieling*

*Plate CLXXV.*



*Batty Langley Invent 1739*

*18 Parts*

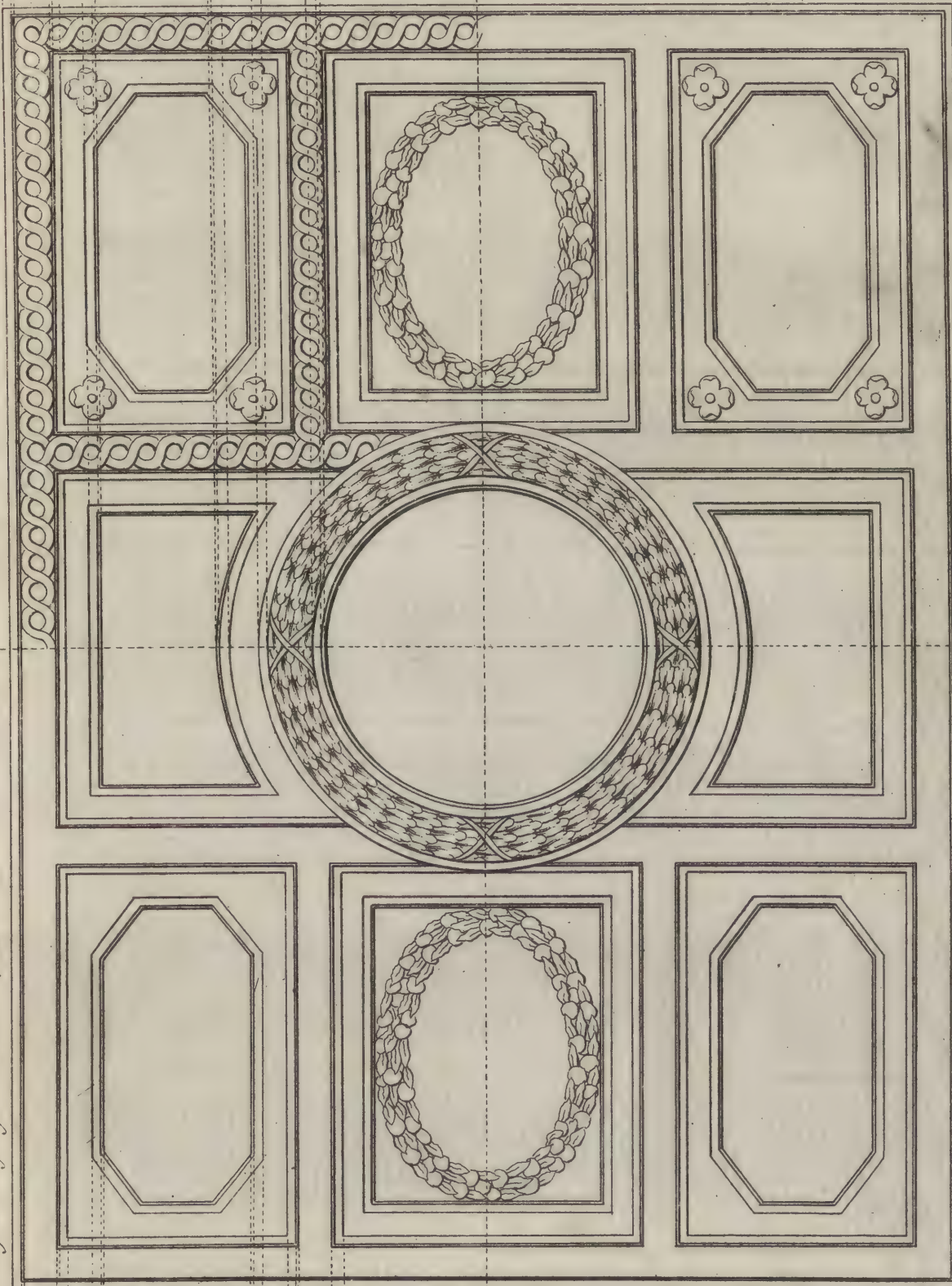
*T. Langley Sculp.*





*Cieling*

*Plate CLXXVI.*



*Batty Langley Invent 1739.*

*Tho. Langley Sculp.*

*21 parts*



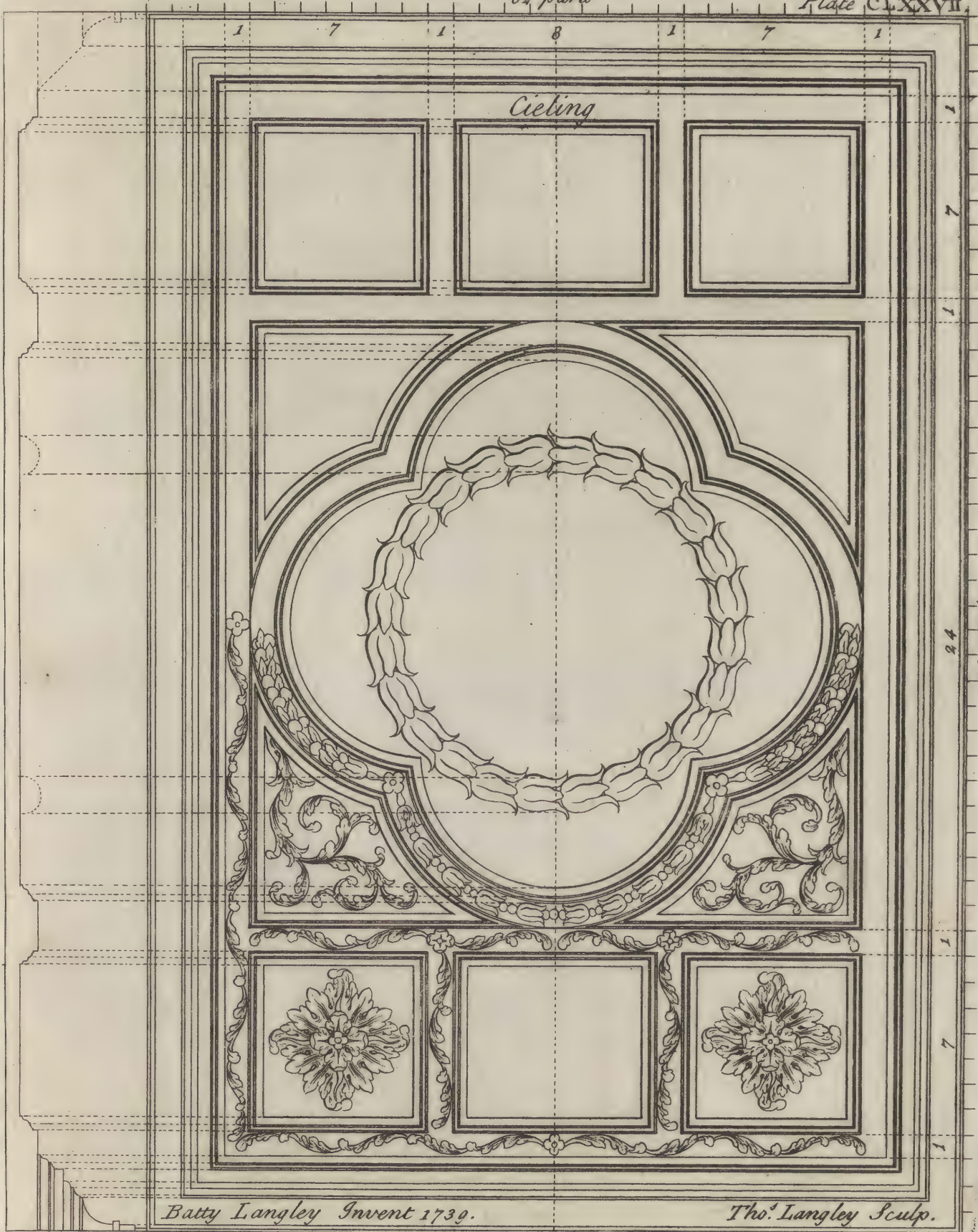


32 parts

Plate CLXXVII

1 7 1 8 1 7 1

Cieling



Batty Langley Invent 1739.

Tho. Langley Sculp.

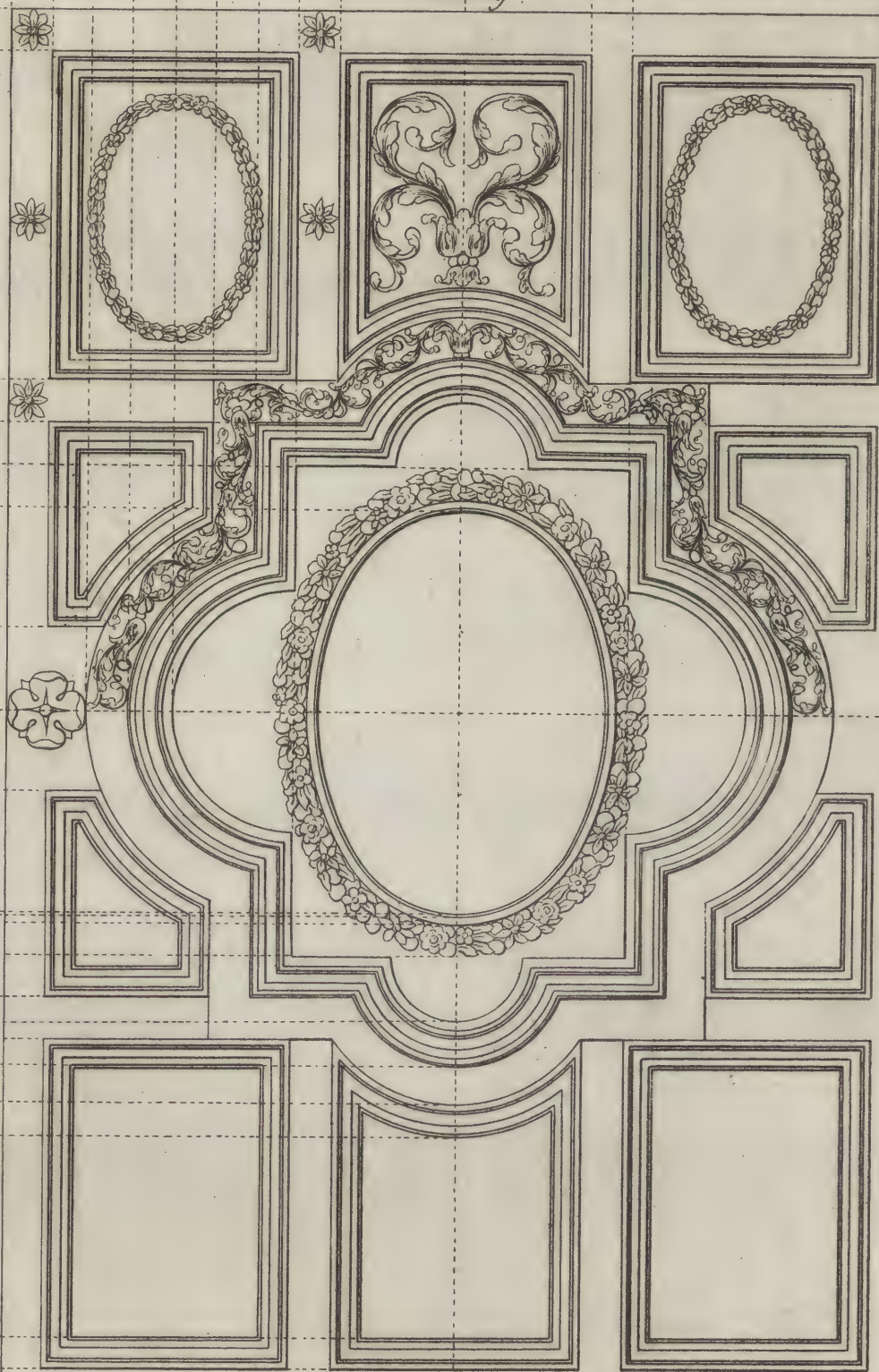




24 parts  
*Cieling*

Plate CLXXVIII.

36 parts



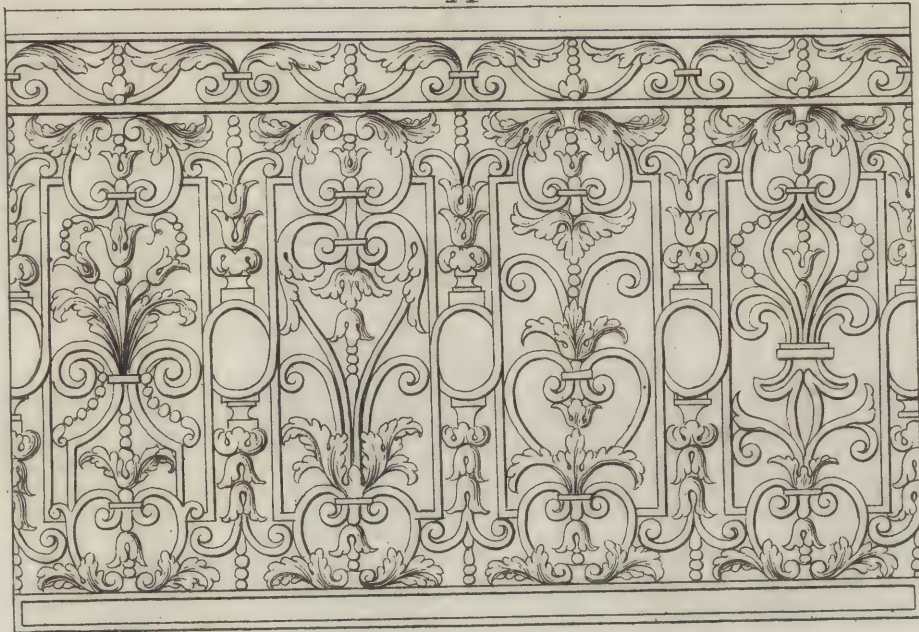
Batty Langley Invent 1739.

T. Langley Sculp.

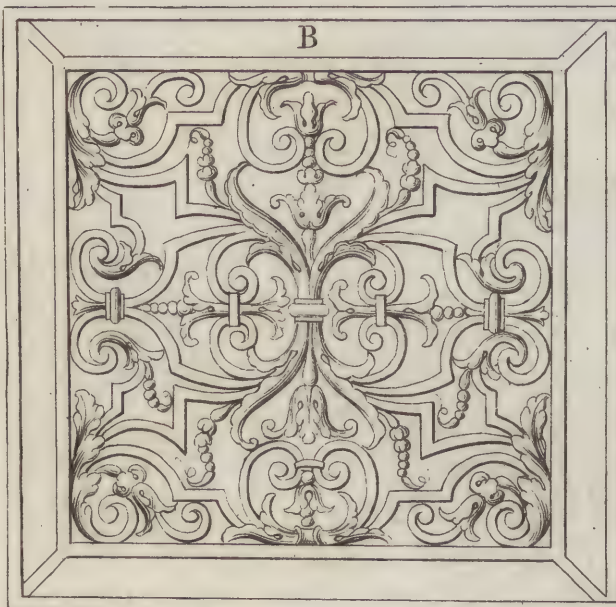




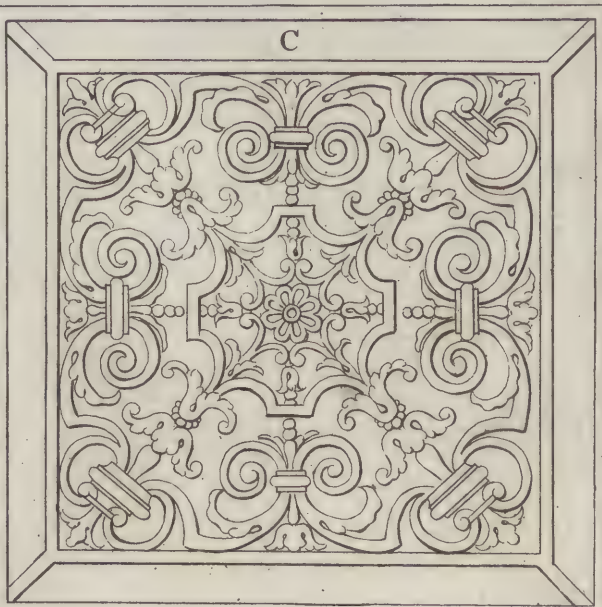
A



B

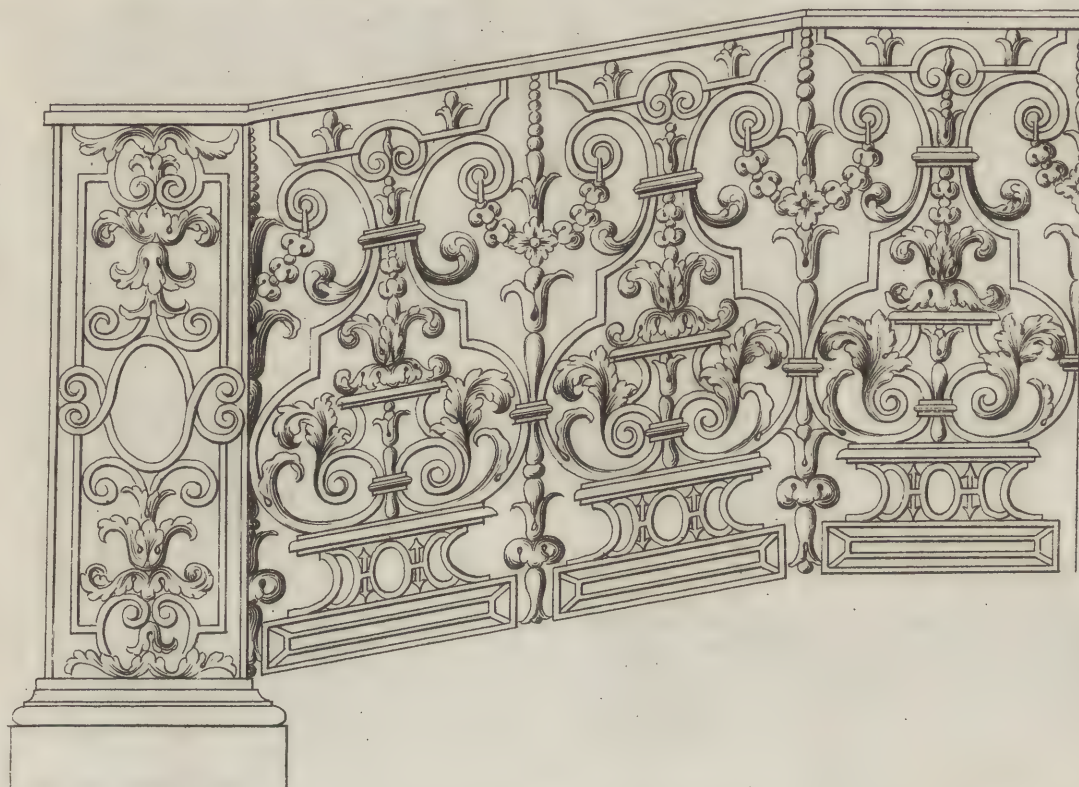


C





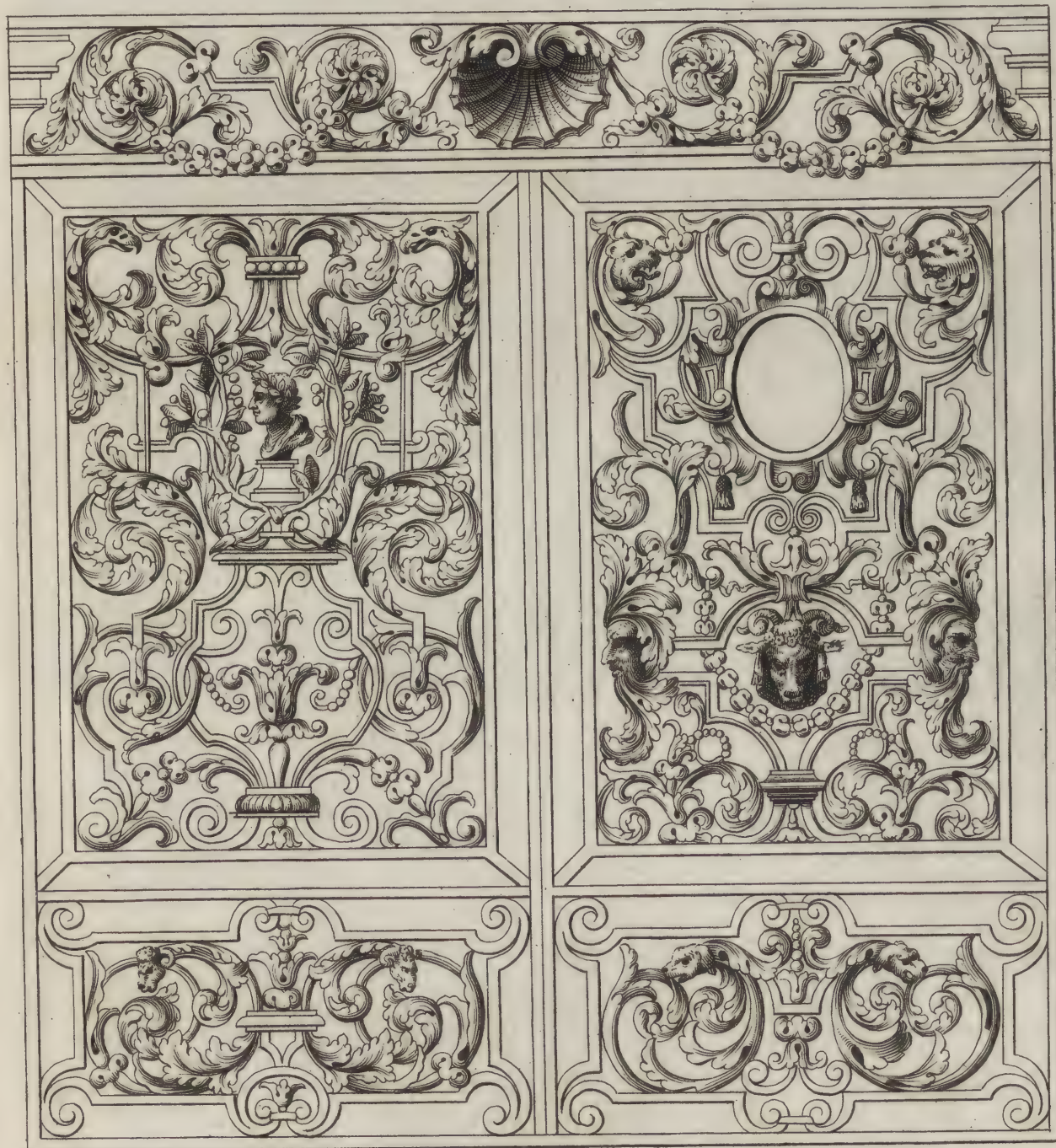








*Pannels for Iron Gates &c.*







12. The first part of the

second part of the

third part of the

fourth part of the

fifth part of the

sixth part of the

seventh part of the

*A Capital for an Iron Support*

*to Galleries &c.*

*Plate CLXXXII*



*Raking Pannels for a Stair Case*

*The Langley Sculp.*





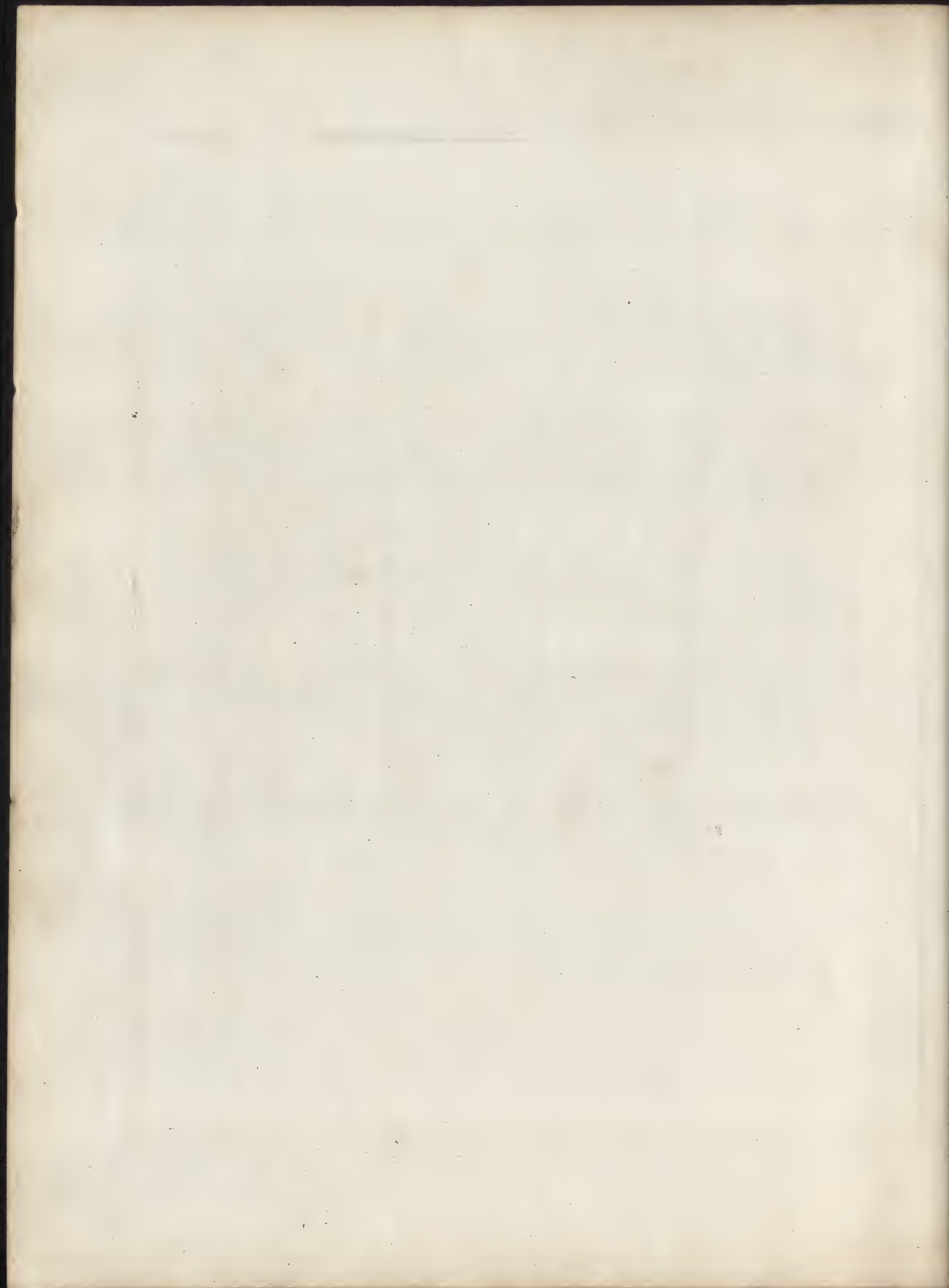
*Iron Gate*

*Plate CLXXXIII*

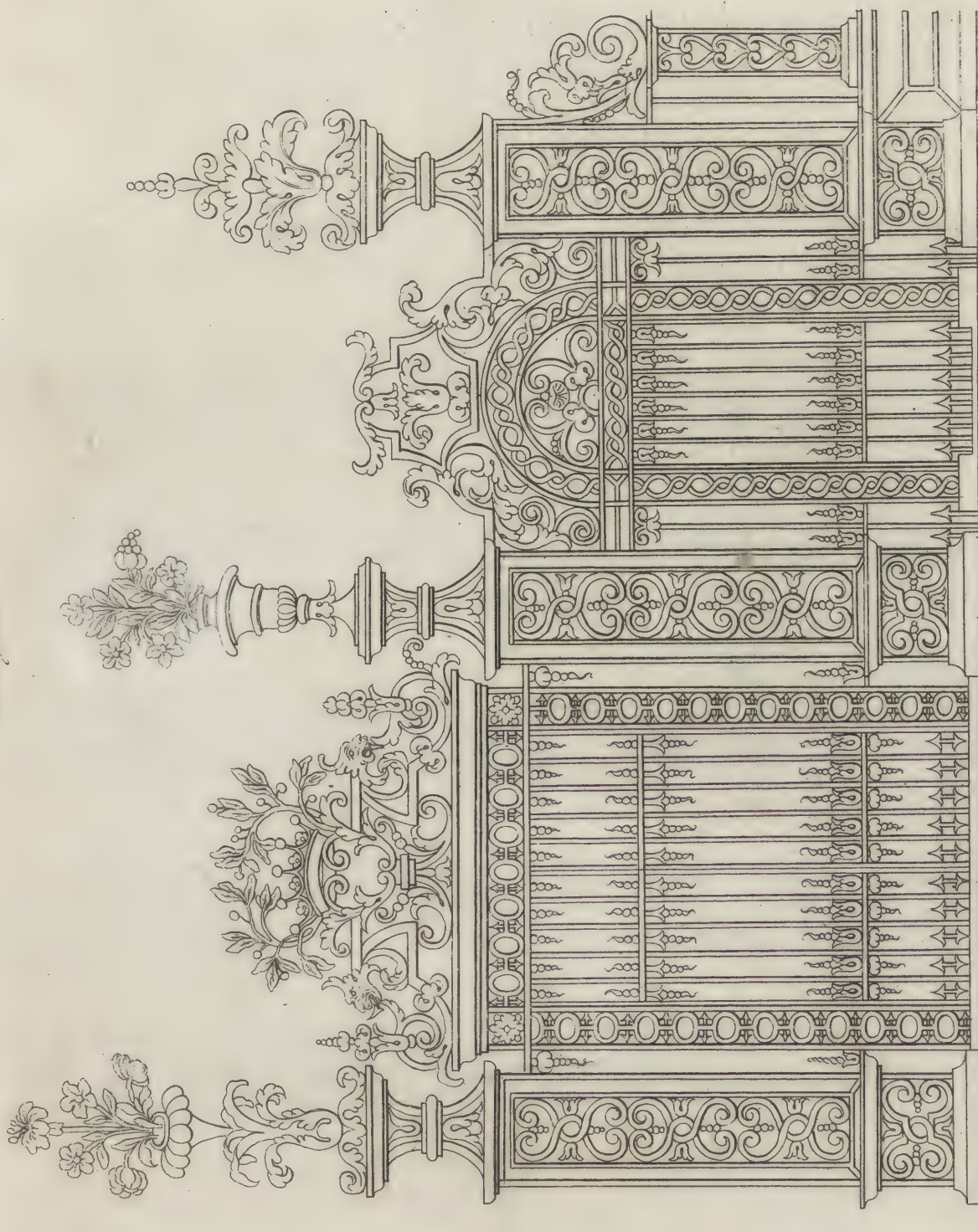


*Tho. Langley Sculp*





*Iron Gates*



*T. Langley Sculp.*



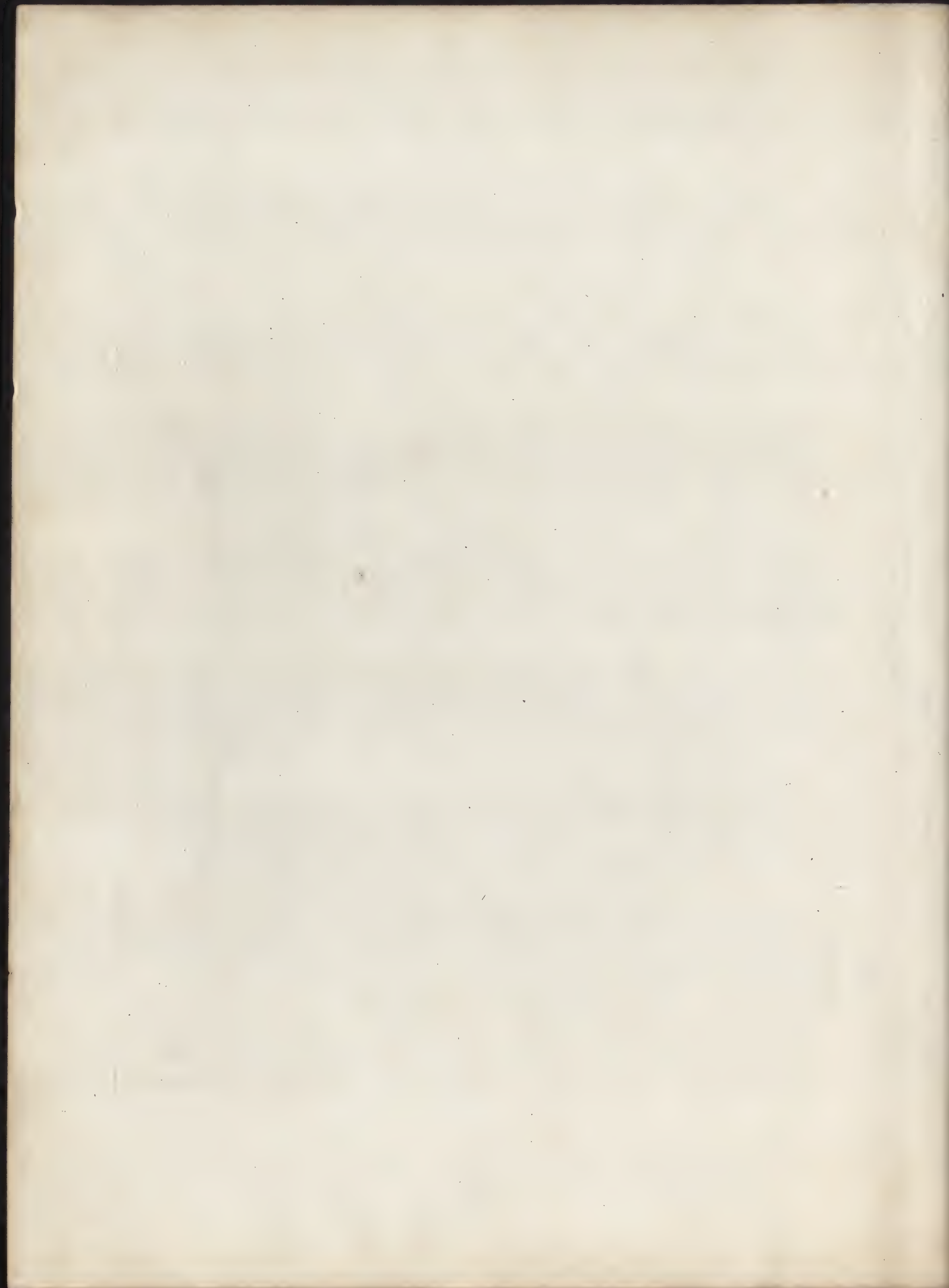
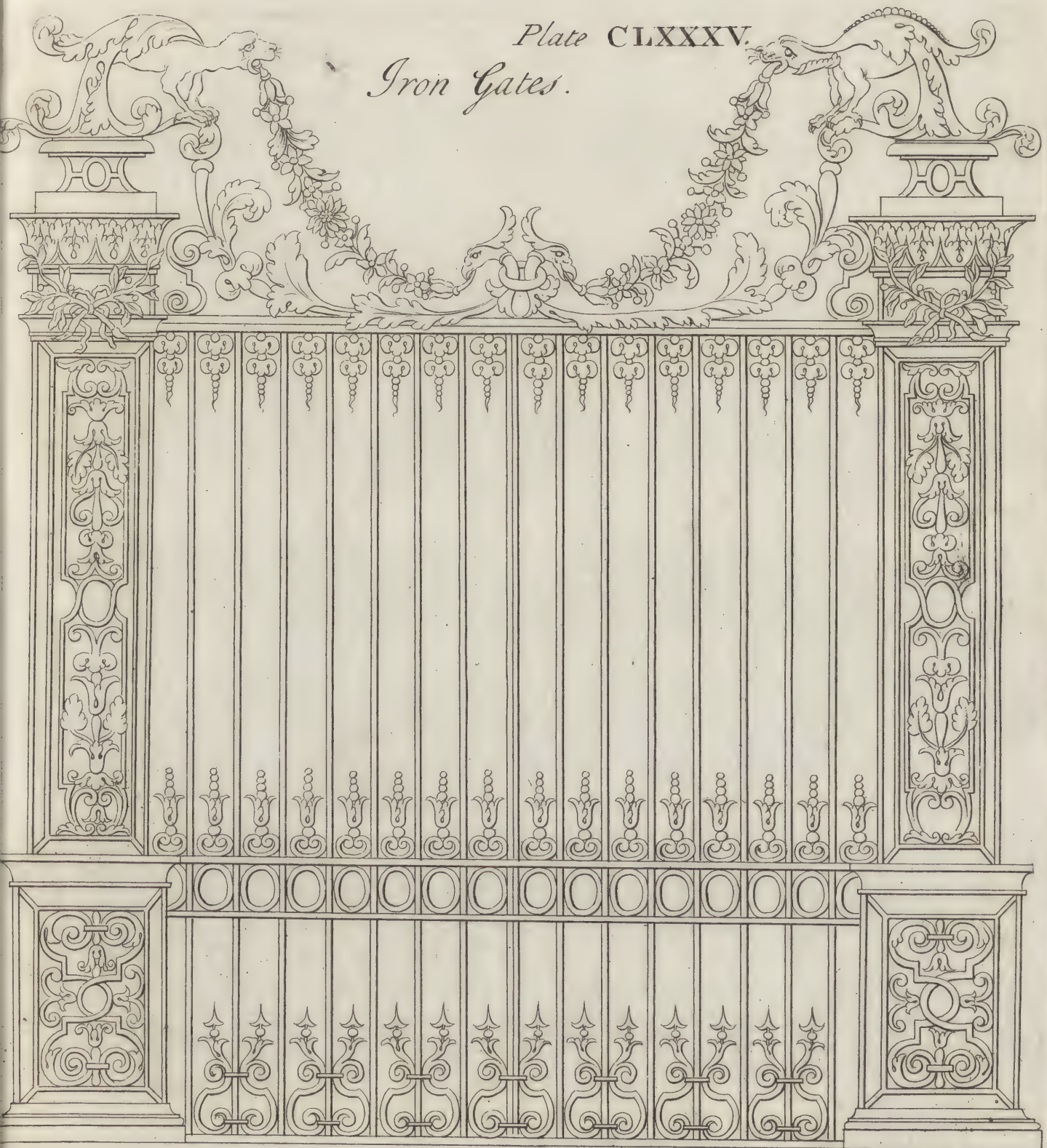


Plate CLXXXV.  
*Iron Gates.*



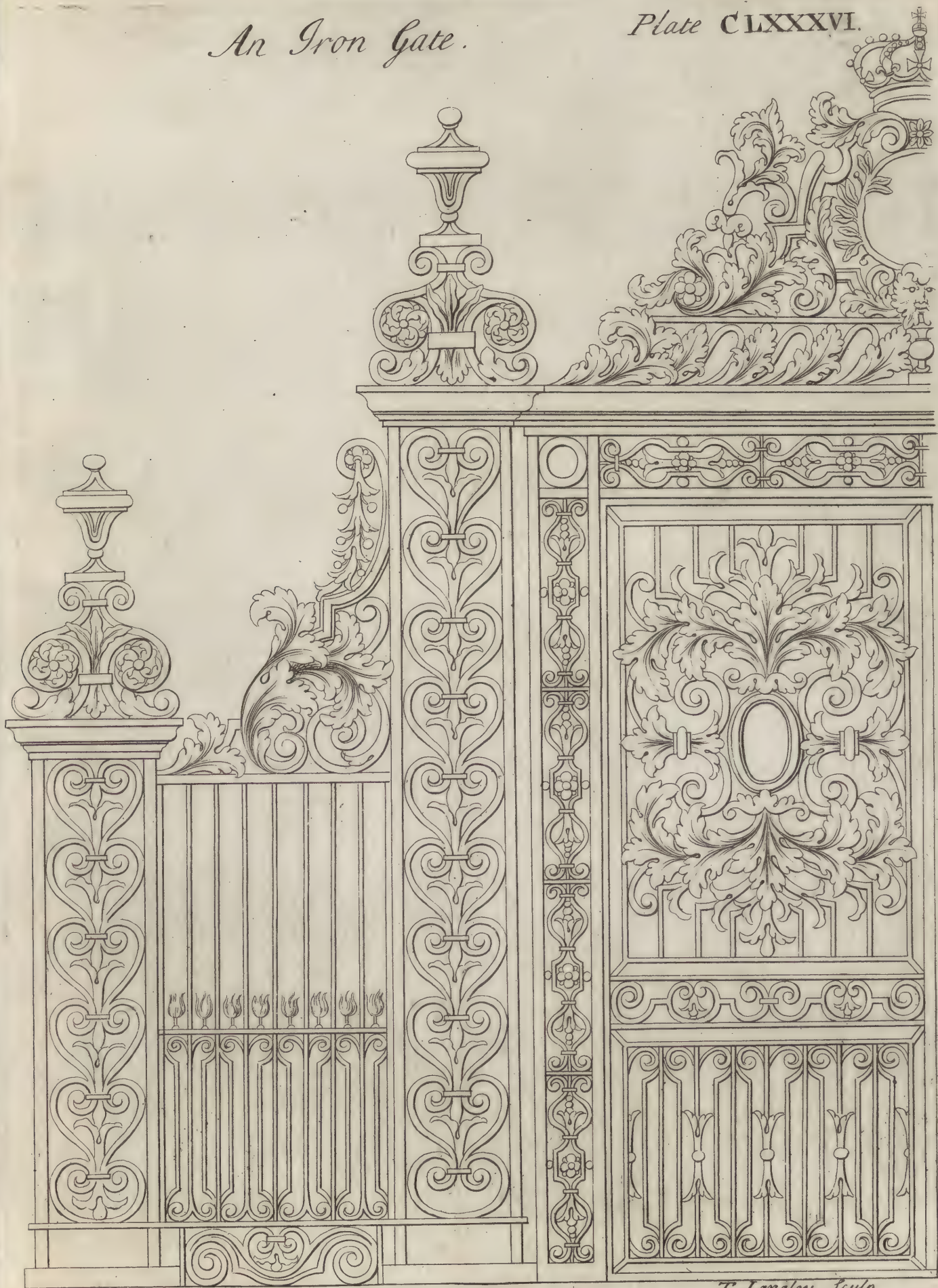
*T. Langley Sculp.*





*An Iron Gate.*

*Plate CLXXXVI.*



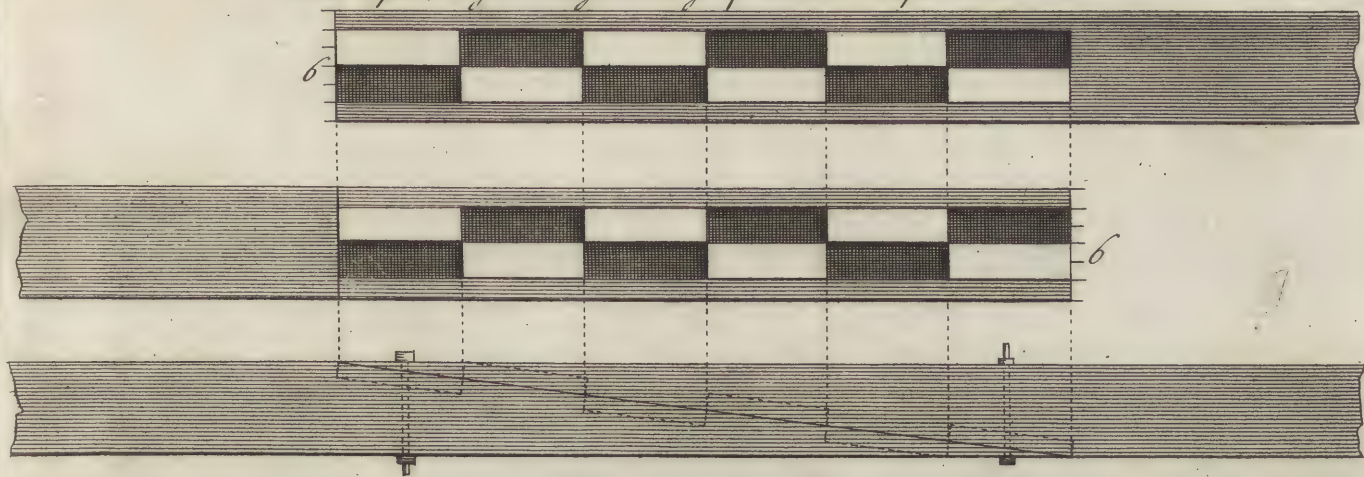
*T. Langley Sculp.*



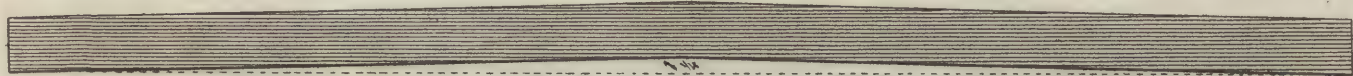


*The Splicing or lengthening of Beams Explained*

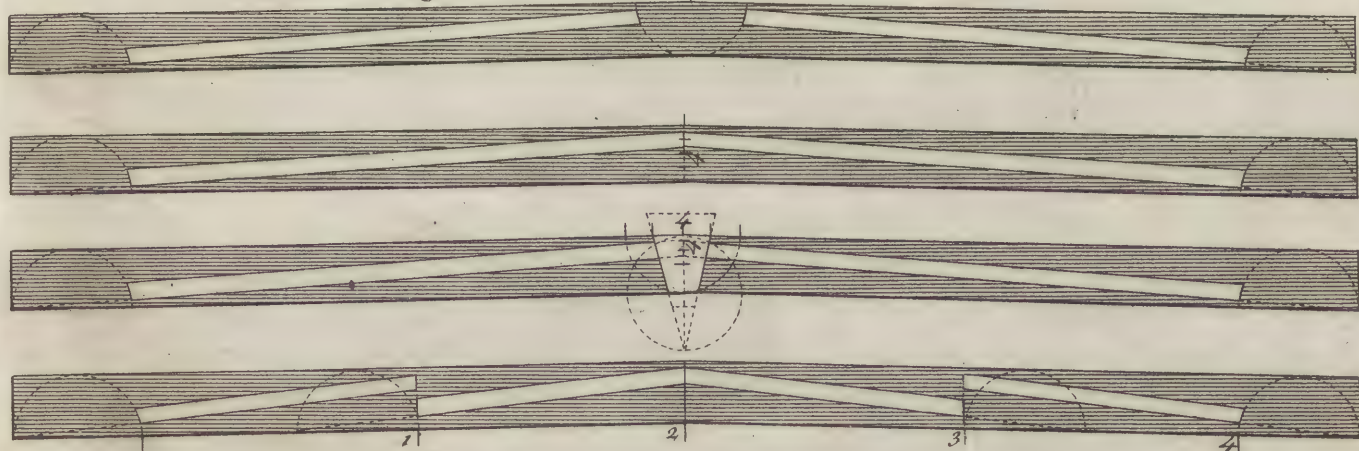
*Plate 1.*



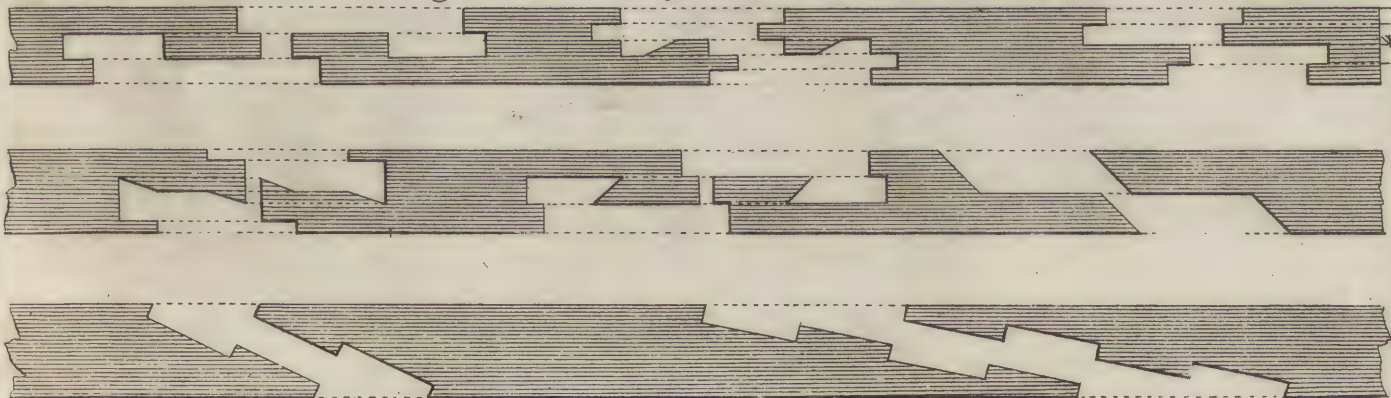
*A Beam camber, with an Inch and  $\frac{1}{4}$  Spring; to 25 Feet Extent*



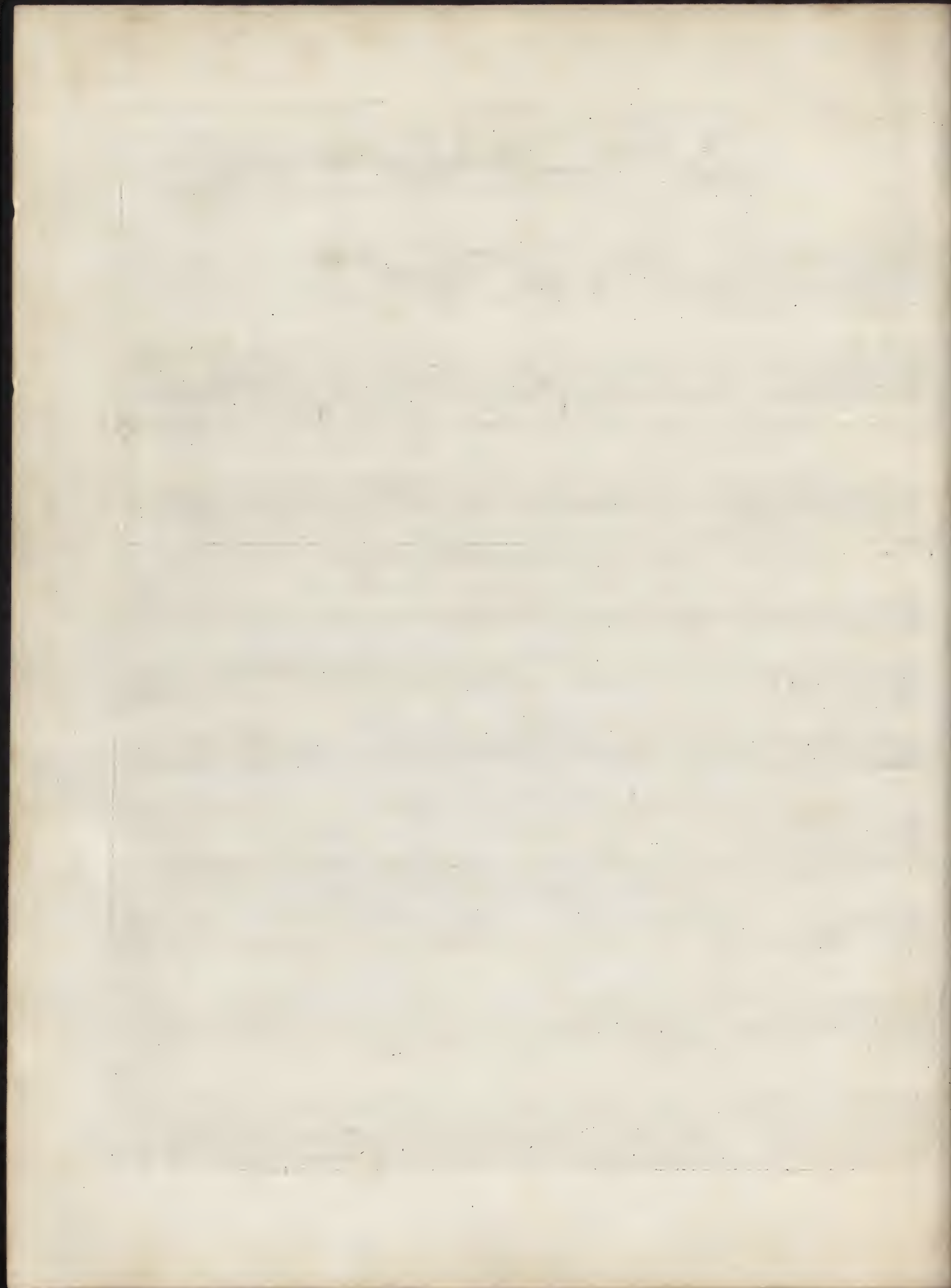
*Different Trusses for Girders and Beams*



*Different Scarfings for Wall Plates, Raisings &c*







# Requisites for Square Roofs Explained

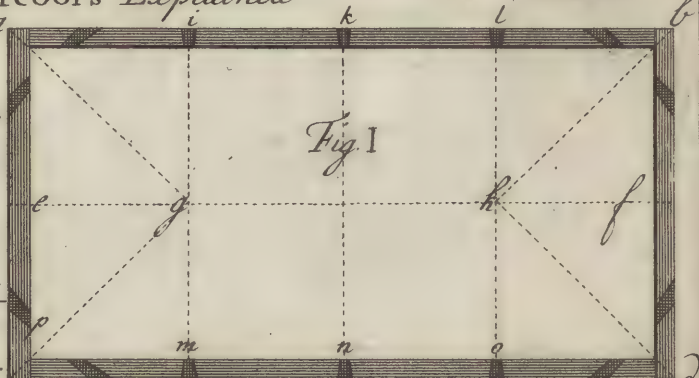
Plate 2.

Fig I

*a b c d*, Plan of the Raising. *e f*, the central Line.  
*i m, l o*, Base Lines of the outward Principals.  
*a g, g c, b h, h d*, Base Lines of  $\frac{1}{2}$  Hips. *g h*, Base  
 of the Ridge. *k n*, Base Line of  $\frac{1}{2}$  Middle pair of  
 Principals, *e g, h f*, Base Lines of Single Princi-  
 pals, which meet  $\frac{1}{2}$  Hips in  $\frac{1}{2}$  points *g h*.

*i k l, m n o*, Dove tailed Mortises in the Raising, to  
 receive the Dove tails or Caulks, of the Beams, *A B C*.

*p p* Dove tailed Mortises to receive the angle Braces as *p p*,  
 in Fig III. *D* a Calk, or Dove tail at larg. *E* The Dove tail  
 Mortis in the raising, to receive the Dove tail or Calk *D*.



The Beams, Calked ready to be laid  
 on the raising, as in Fig. III

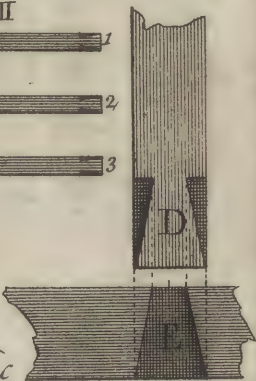
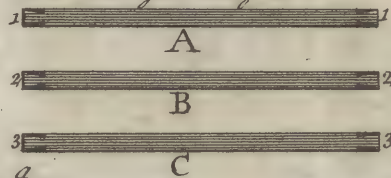


Fig II

To find the Lengths of the Principal and Hip Rafters.  
 Make *d b*, equal to  $\frac{1}{2}$  breadth of the Building,  
 and *a c*, equal to the Height of the Pitch: Then *a b*,  
 is  $\frac{1}{2}$  Length of a pair of Principals, & *d a c*, the  
 angle of the Top, *a d c*, the angle of the Foot of the  
 Principal *a d*.

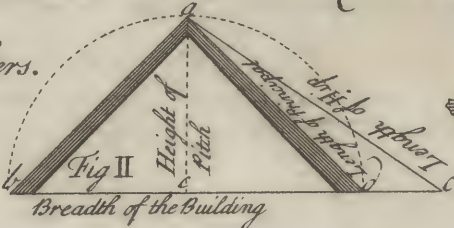


Fig III

*a b c d* Plan of the Raising. *f g, f g, f g*, Beams  
 caulked down on  $\frac{1}{2}$  Raising. *p p, p p, & c* Angle  
 Braces, caulked down in like manner.

*a e, b e, c e, d e*, Dragon Pieces to receive the Feet of  
 the Hip Rafters. *a h, b h, c h, d h*, Hip Rafters.

*a h k*, the angle of the Top, & *a k h*, the angle of the  
 Foot of the Hip *a h*.

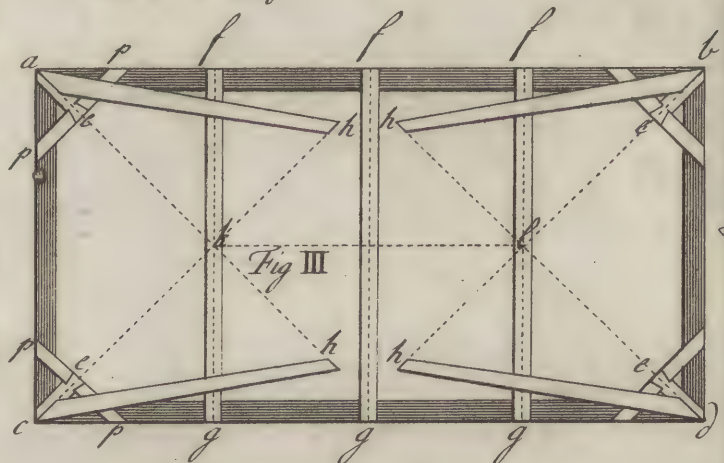
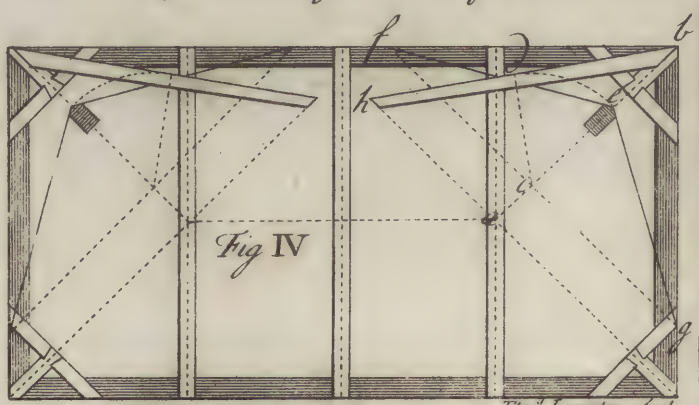


Fig IV

To find the angle of the Back of a Hip, in any  
 Regular or Irregular Building.

RULE On any part of its Base line as *c*, draw a  
 right Line, at right angles, as *f g*; Set up the Hip  
 as *h b*, and from *c*, draw *c d*, perpendicular to  
 the Hip *h b*, make *c e*, equal to *c d* and draw the  
 Lines *f e, e g* then the angle *f e g*, is the angle  
 of the Back required.



Published November 16<sup>th</sup> 1741,  
 by Sam. Harding.

Batley, Langley, Inv. 1741

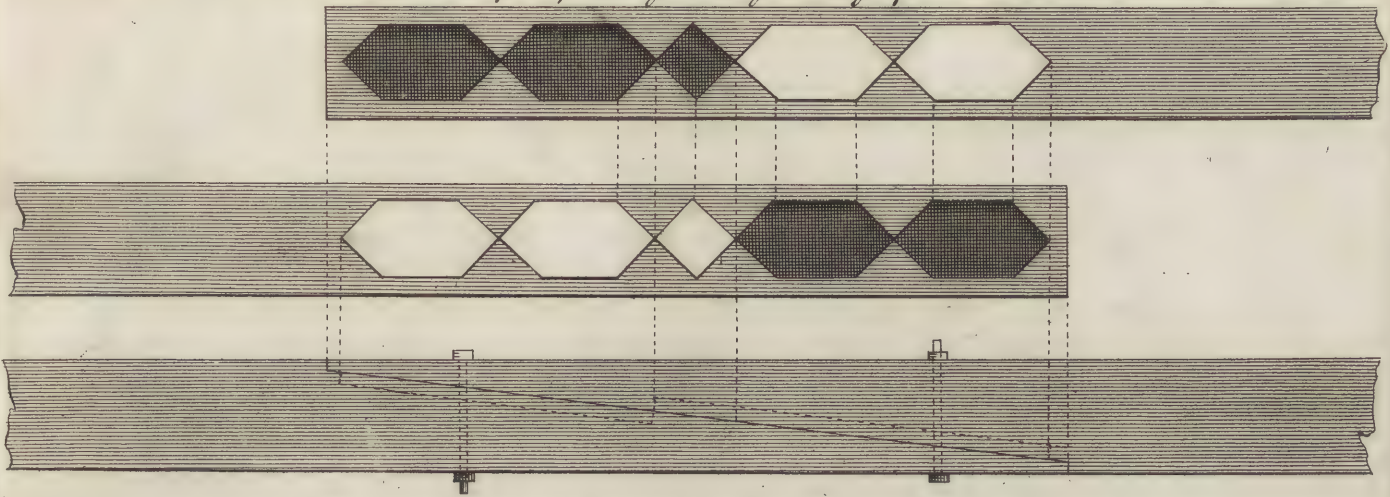
Tho. Langley Sculp



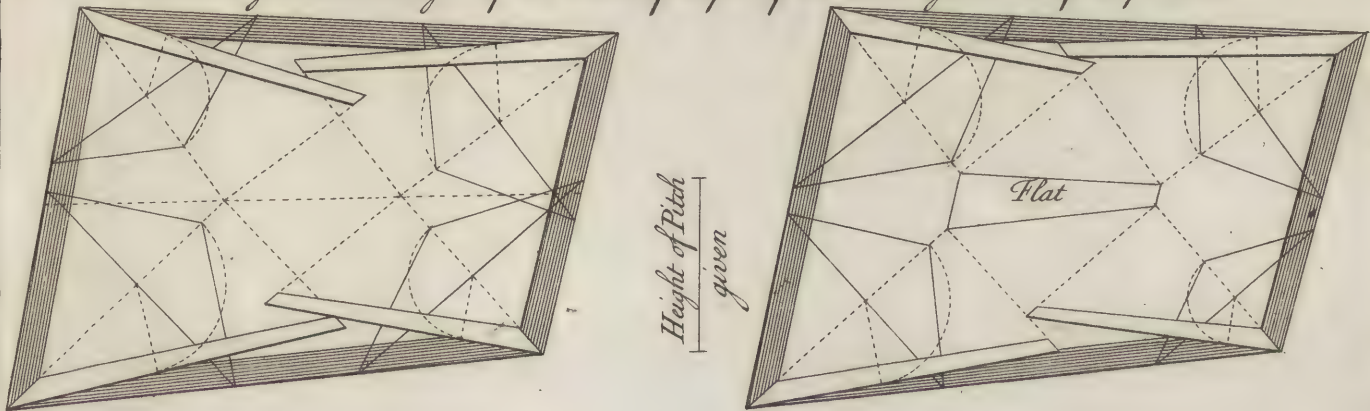


*A Second Method for Splicing or lengthening of Beams*

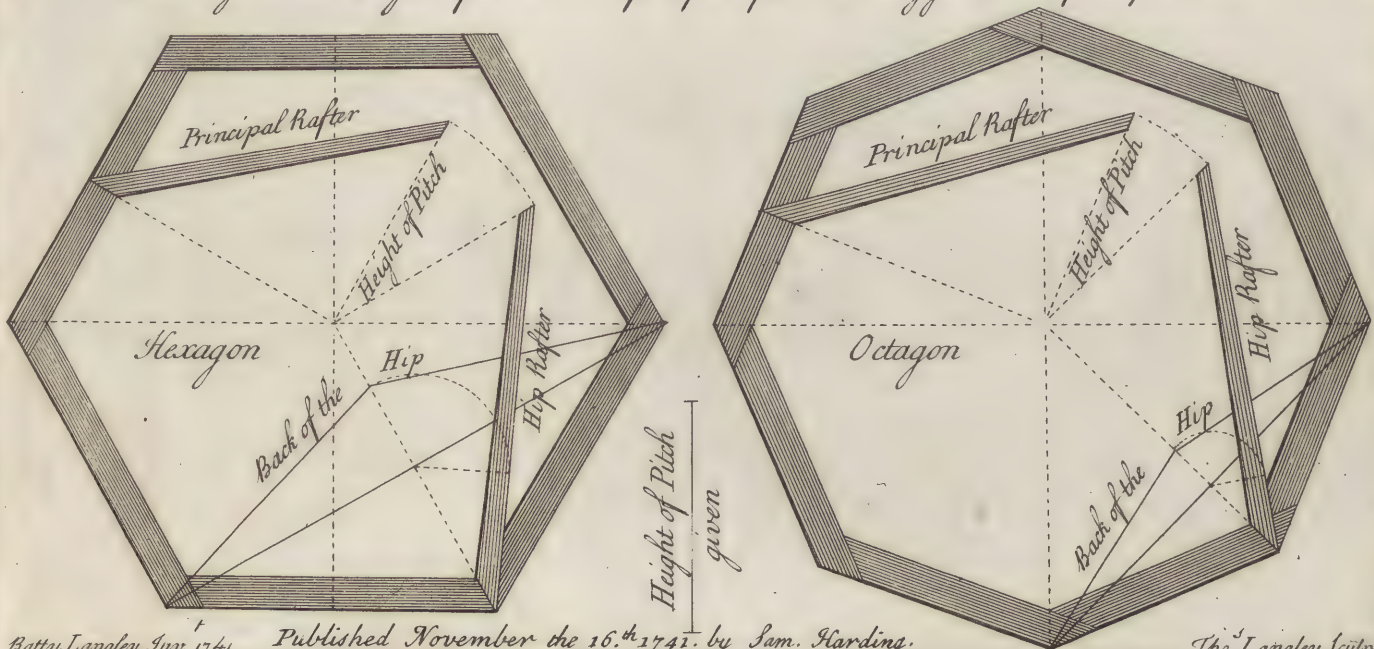
Plate 3.



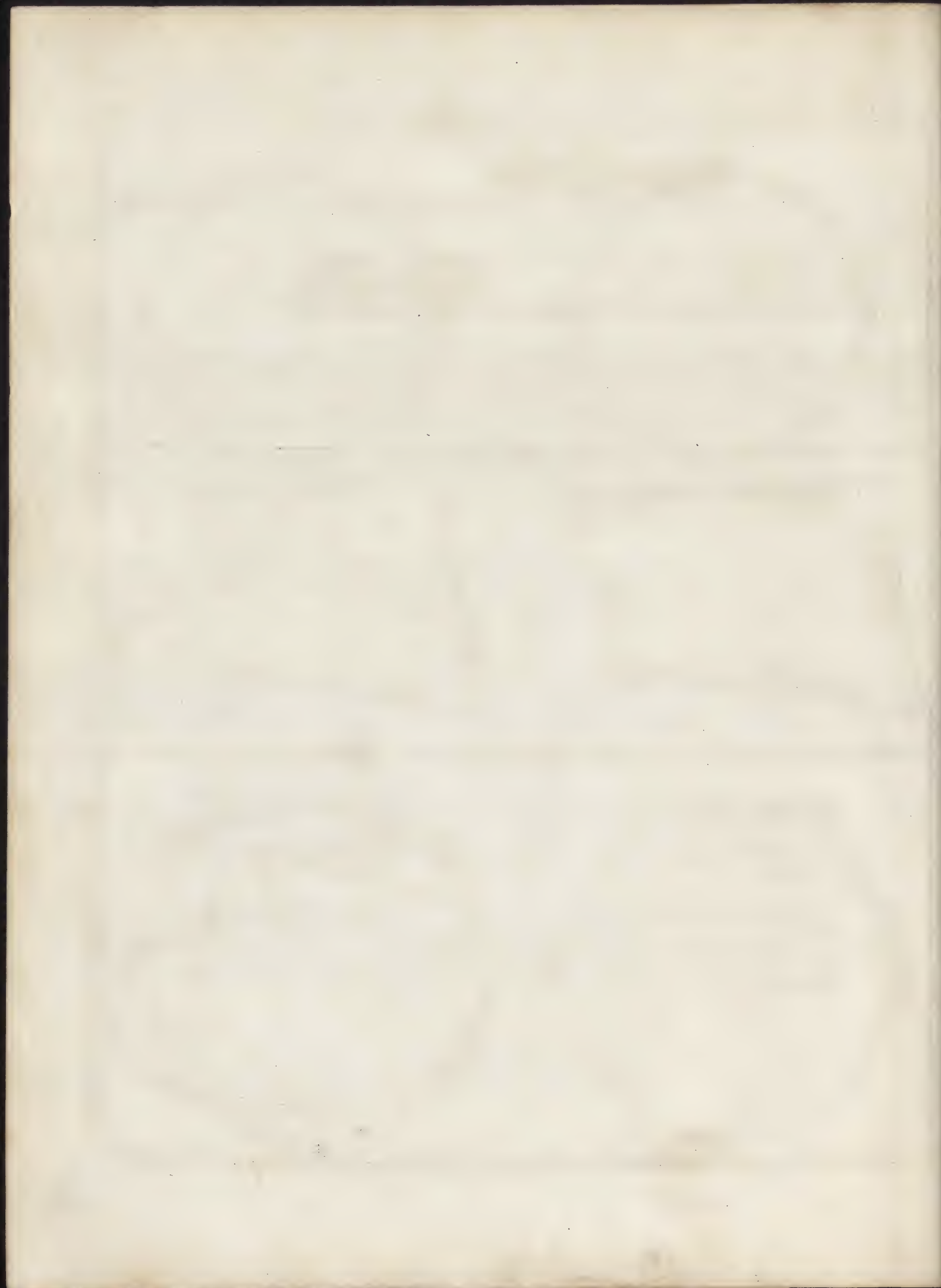
*The Lengths and Angles of the Backs of Hip Rafter in Irregular Roofs explained*



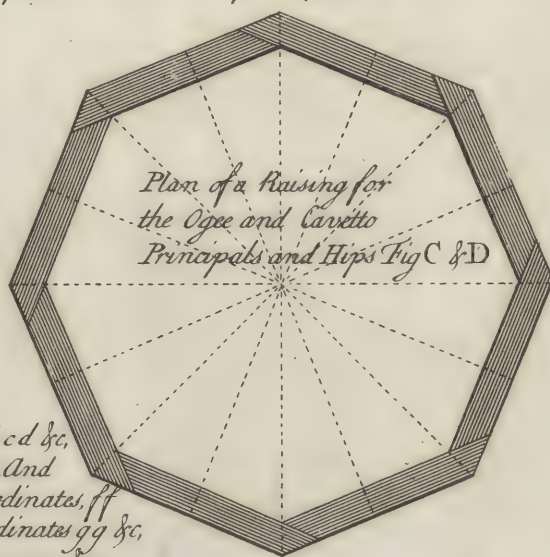
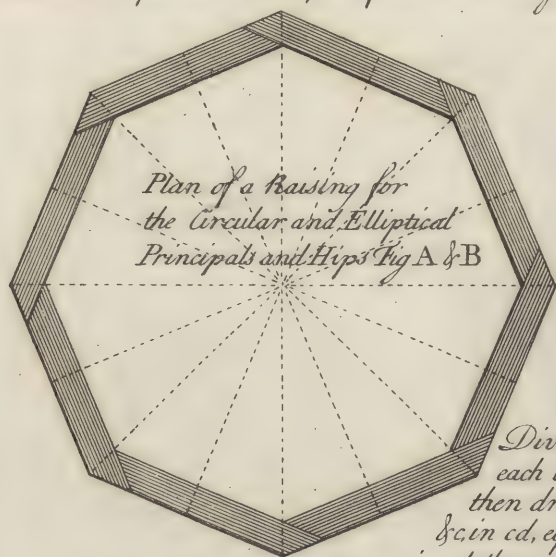
*The Lengths and Angles of the Backs of Hip Rafter in Polygonal Roofs explained*



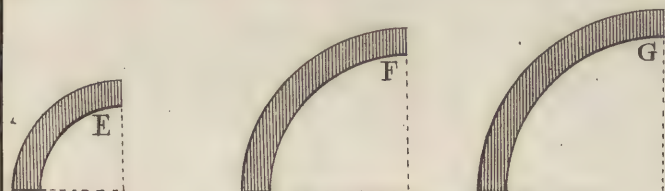
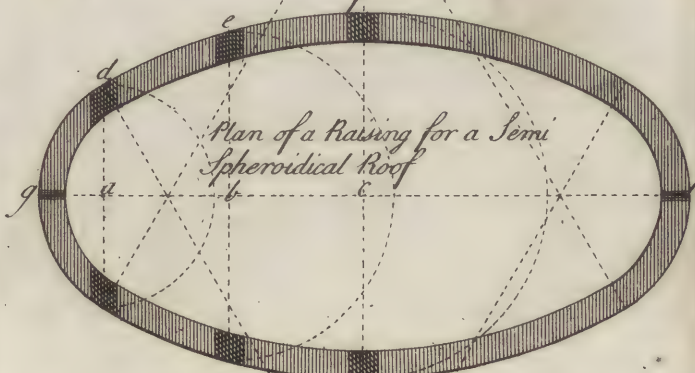
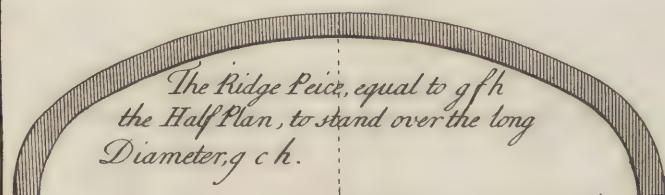
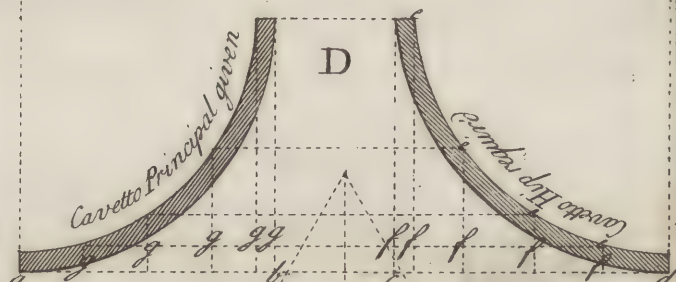
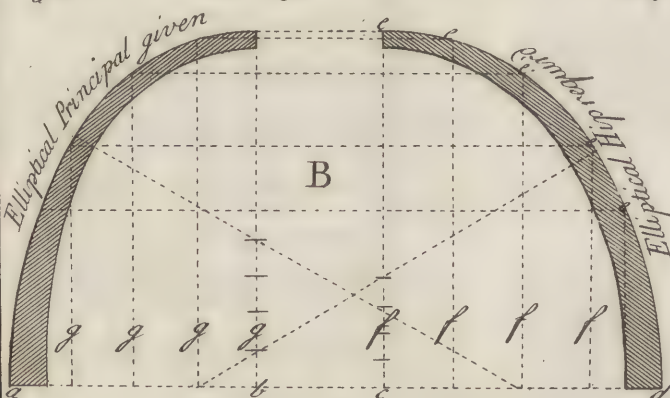
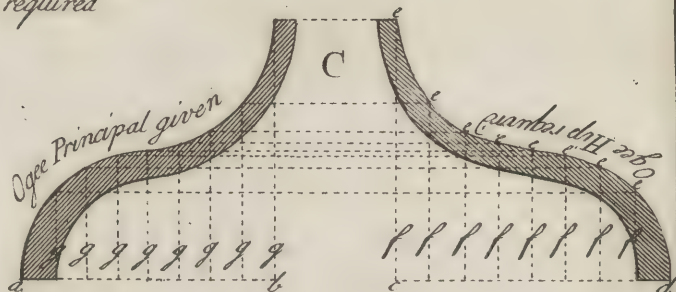
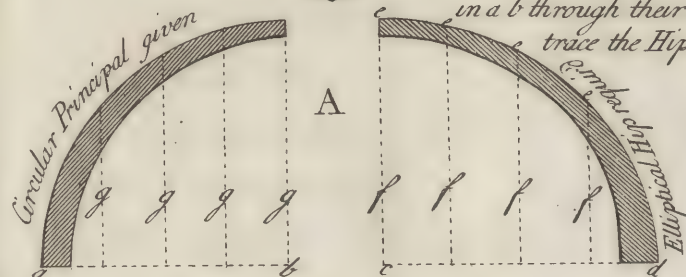




*Circular Elliptical &c Hip Rafter to Octangular and Spheroidal Roofs Explained. Plate 4.*



Operation  
Divide a b &c, and c d &c, each into 4 &c parts, And then drawing the Ordinates, ff &c, in c d, equal to the Ordinates gg &c, in a b through their extremes e e &c, trace the Hips required



Batty Langley Inv<sup>r</sup> 1741. Published November 16<sup>th</sup> 1741. On {g} with the {g d} describe {E} and so if like {c} Radius {c f} of Rafter {G} for others The Langley Sculp





# To lay out a Square Roof in Ledgement

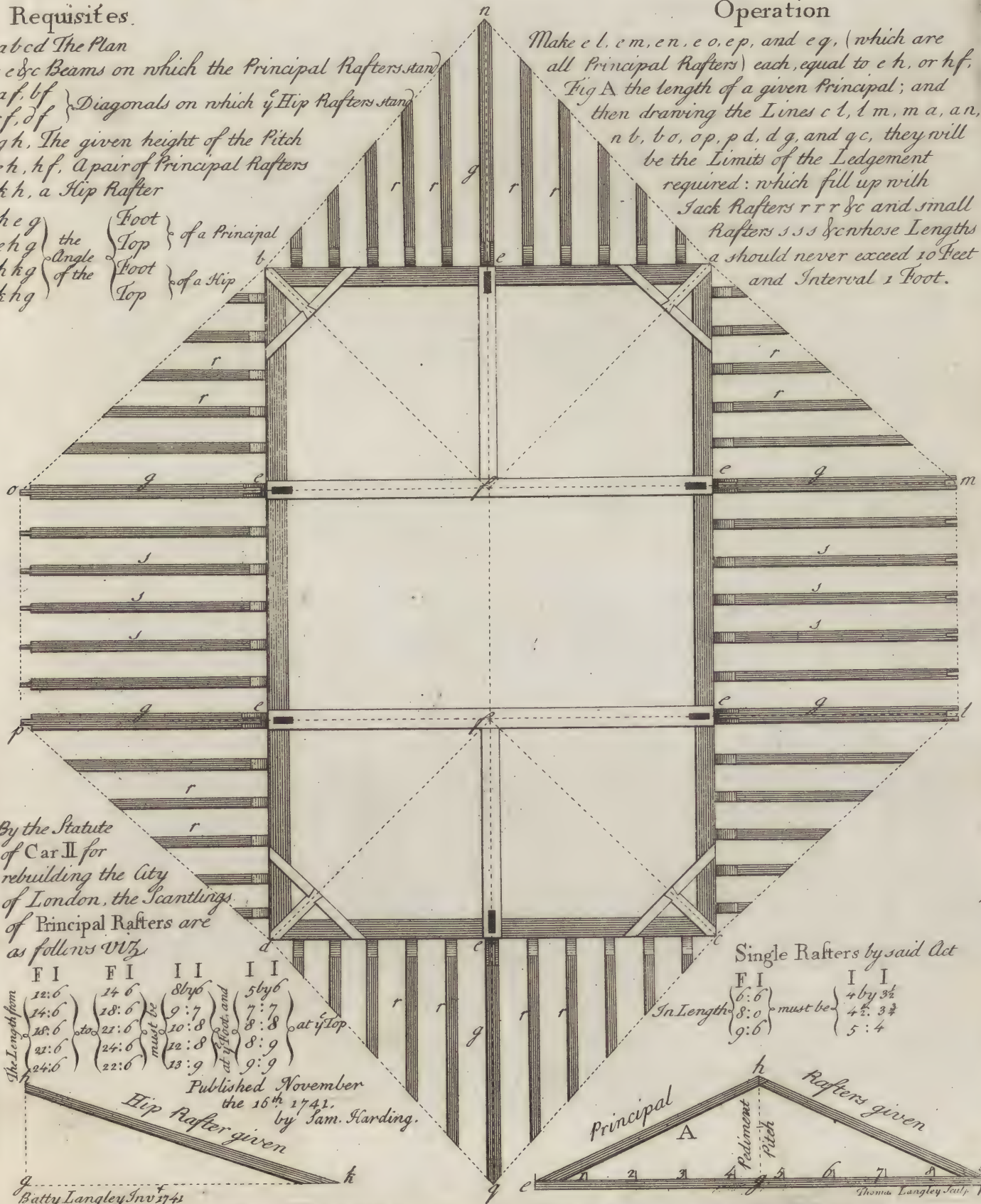
Plate 5.

## Requisites.

*abcd* The Plan  
*ee &c* Beams on which the Principal Rafters stand  
*af, bf* } Diagonals on which  $\frac{1}{2}$  Hip Rafters stand  
*cf, df* }  
*gh*, The given height of the Pitch  
*eh, hf*, A pair of Principal Rafters  
*hh*, a Hip Rafter  
*heg* } the Foot of a Principal  
*ehg* } the Top of a Principal  
*hhg* } the Foot of a Hip  
*hng* } the Top of a Hip

## Operation

Make *el, em, en, eo, ep*, and *eq*, (which are all Principal Rafters) each, equal to *eh*, or *hf*.  
 Fig A the length of a given Principal; and then drawing the Lines *cl, lm, ma, an, nb, bo, op, pd, dg*, and *qc*, they will be the Limits of the Ledgement required: which fill up with Jack Rafters *rrr &c* and small Rafters *sss &c* whose Lengths should never exceed 10 Feet and Interval 1 Foot.



By the Statute  
 of Car II for  
 rebuilding the City  
 of London, the Scantlings  
 of Principal Rafters are  
 as follows viz

FI	FI	II	II
22:6	24:6	8:6	5:6
14:6	18:6	9:7	7:7
18:6	22:6	10:8	8:8
22:6	24:6	12:8	8:9
24:6	22:6	13:9	9:9

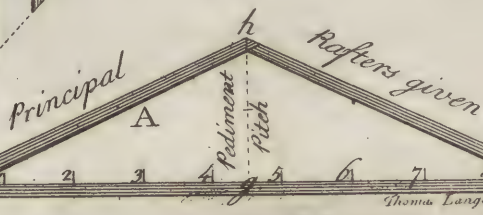
Published November  
 the 16<sup>th</sup> 1741.  
 by Sam. Harding.

Hip Rafter given

Single Rafters by said Act

FI	FI	II	II
6:6	4:6	4:6	3:6
8:6	4:6	4:6	3:6
9:6	4:6	4:6	3:6

In Length must be







# A Square Double Roof (Commonly called an M Roof) in Ledge and Batt

Plate 6.

*a b c d*, the Plan, or Eaves  
*f g, g i, i h, h f*, Ridges  
*a g, b f, c i, d h*, Bases of the Hips  
*h f, k g, k i, k h*, Bases of the Valleys  
*p n, or r m*, Height of Pitch  
*q n, n k*, and *k m, m s* two pair of principal Rafters  
*f l*, and *i o*, height of pitch equal to *p n* or *r m*  
*l b*, and *o c*, length of the two Hips  
*l k*, and *o k*, length of two Sleepers or Valley pieces.  
*t t &c* principal Rafters laid out  
*1, 2, 3, 4, 5, 6, 7, 8* Ridge Pieces which stand over *f g, g i, i h*, and *h f*

Fig. A

*k l m* } the Angle at the Top of a Principal Rafter  
*h i g* }

Fig. B

*c a b* } the Angle at the Top of a Hip  
*d e f* }

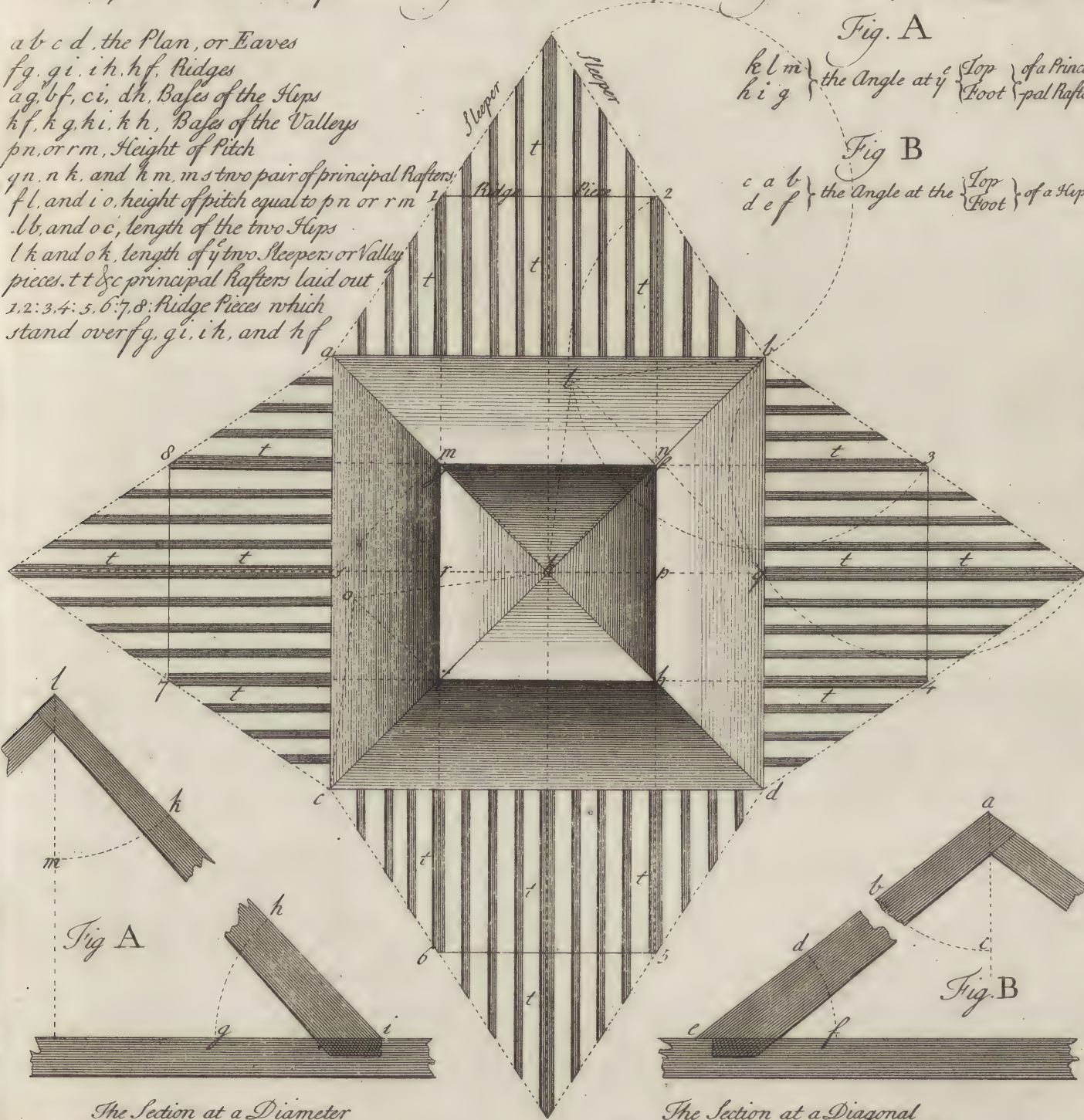
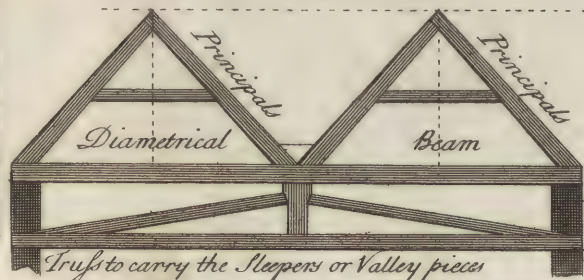


Fig. A

Fig. B

The Section at a Diameter

The Section at a Diagonal



Truss to carry the Sleepers or Valley pieces

Batty Langley Inv. 1742

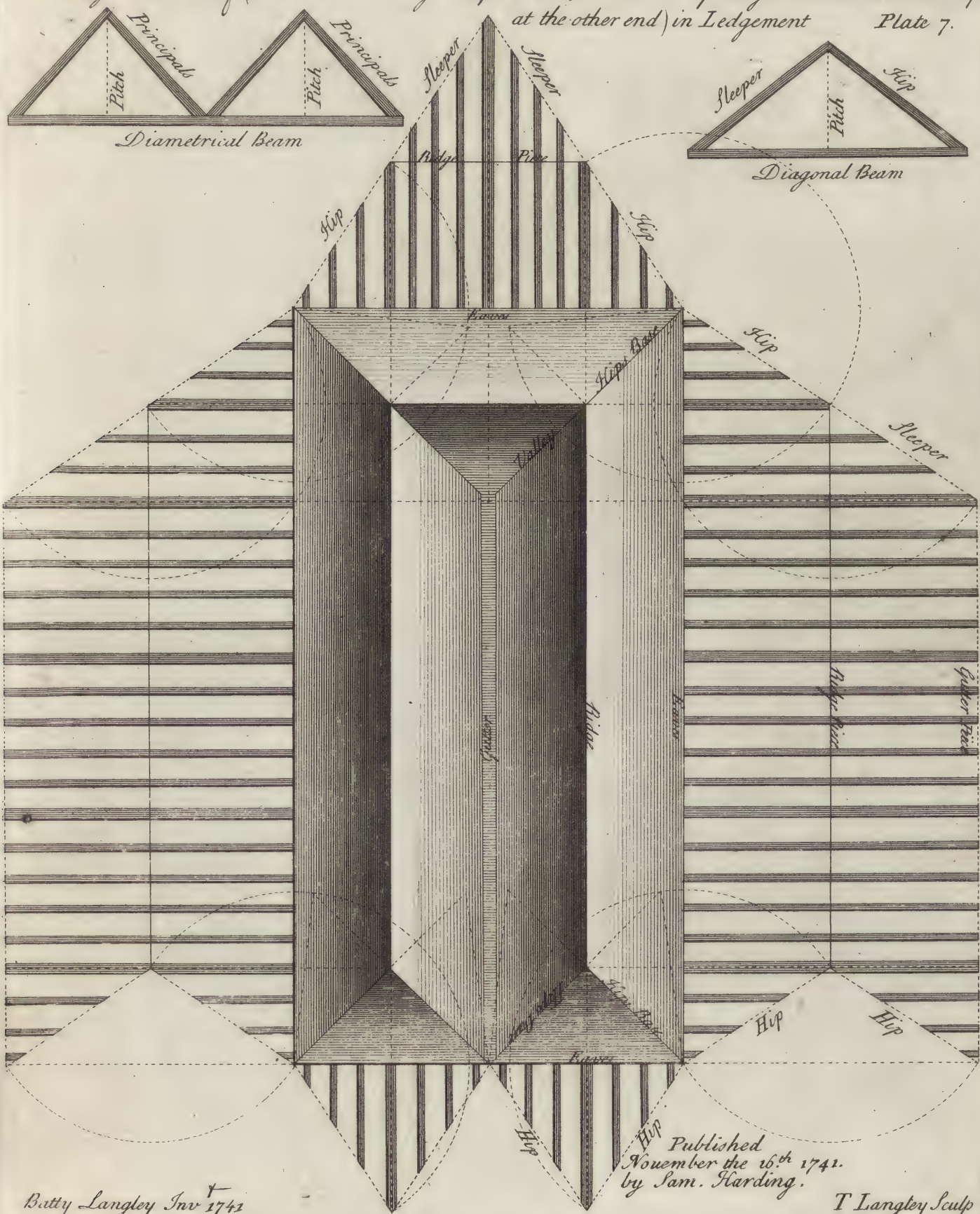
Published November the 16.<sup>th</sup>  
 1742, by Sam. Harding.

T. L. Sculp





An Oblong Double Roof (returned with single Hips at one End with an open Gutter and Double Hips at the other end) in Ledge ment Plate 7.



Batty Langley Inv 1741

Published  
November the 16<sup>th</sup> 1741.  
by Sam. Harding.

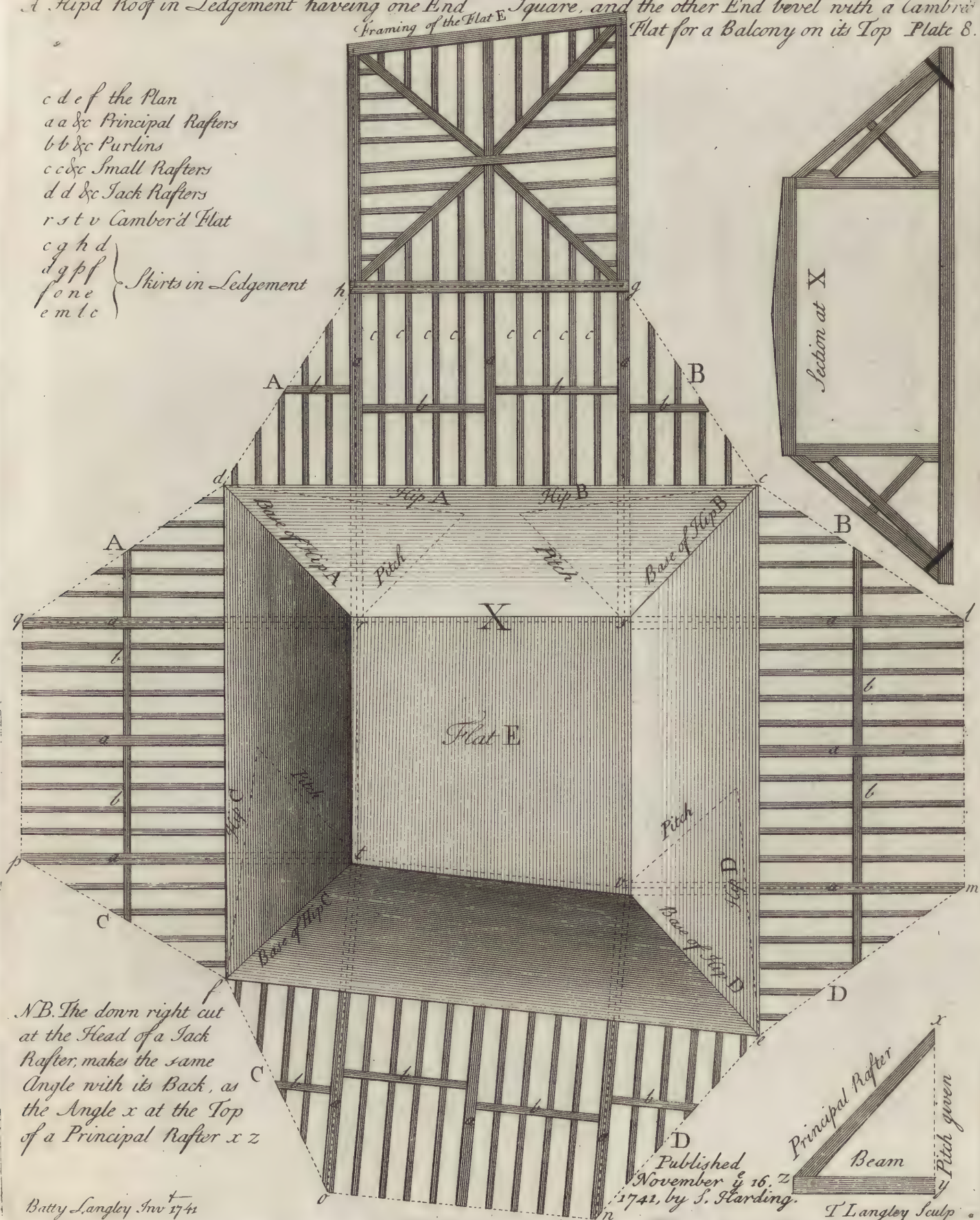
T Langley Sculp





A Hip'd Roof in Sledgement having one End Square, and the other End bevel with a Camber'd Flat for a Balcony on its Top Plate 8.

c d e f the Plan  
 a a &c Principal Rafters  
 b b &c Purlins  
 c c &c Small Rafters  
 d d &c Jack Rafters  
 r s t v Camber'd Flat  
 c g h d  
 d g p f } Shirts in Sledgement  
 f o n e  
 e m l c



N.B. The down right cut at the Head of a Jack Rafter, makes the same Angle with its Back, as the Angle x at the Top of a Principal Rafter x z

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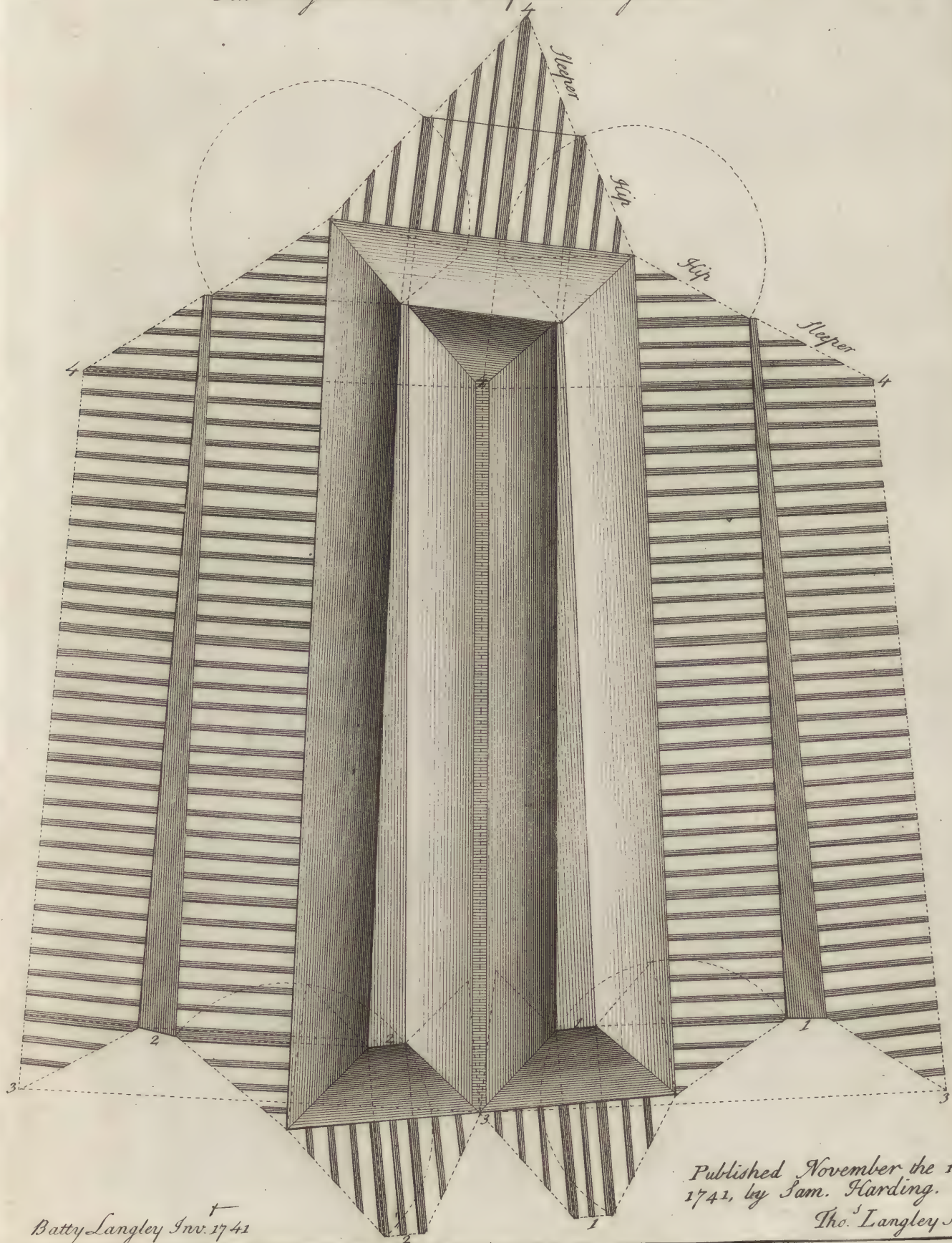
T Langley Sculp.





*An Irregular Double Roof in Lodgement*

Plate 9.



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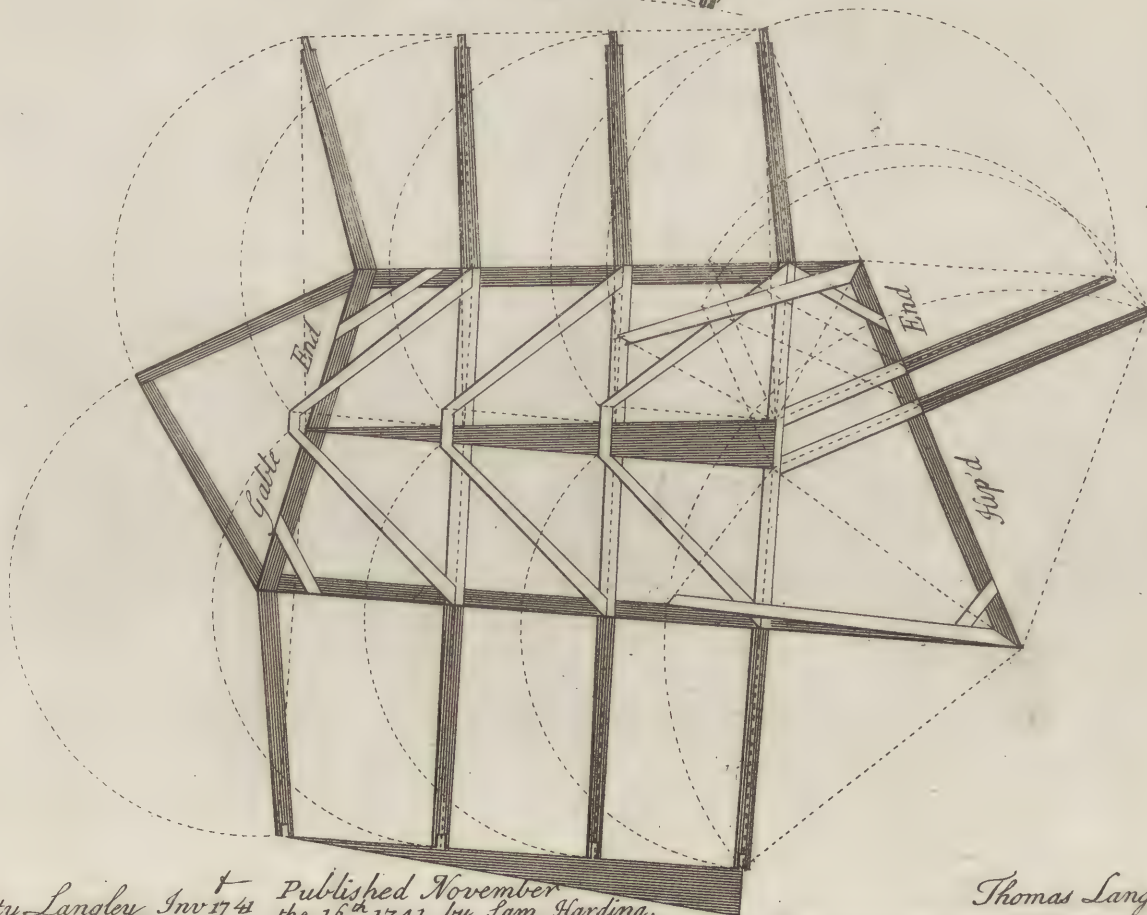
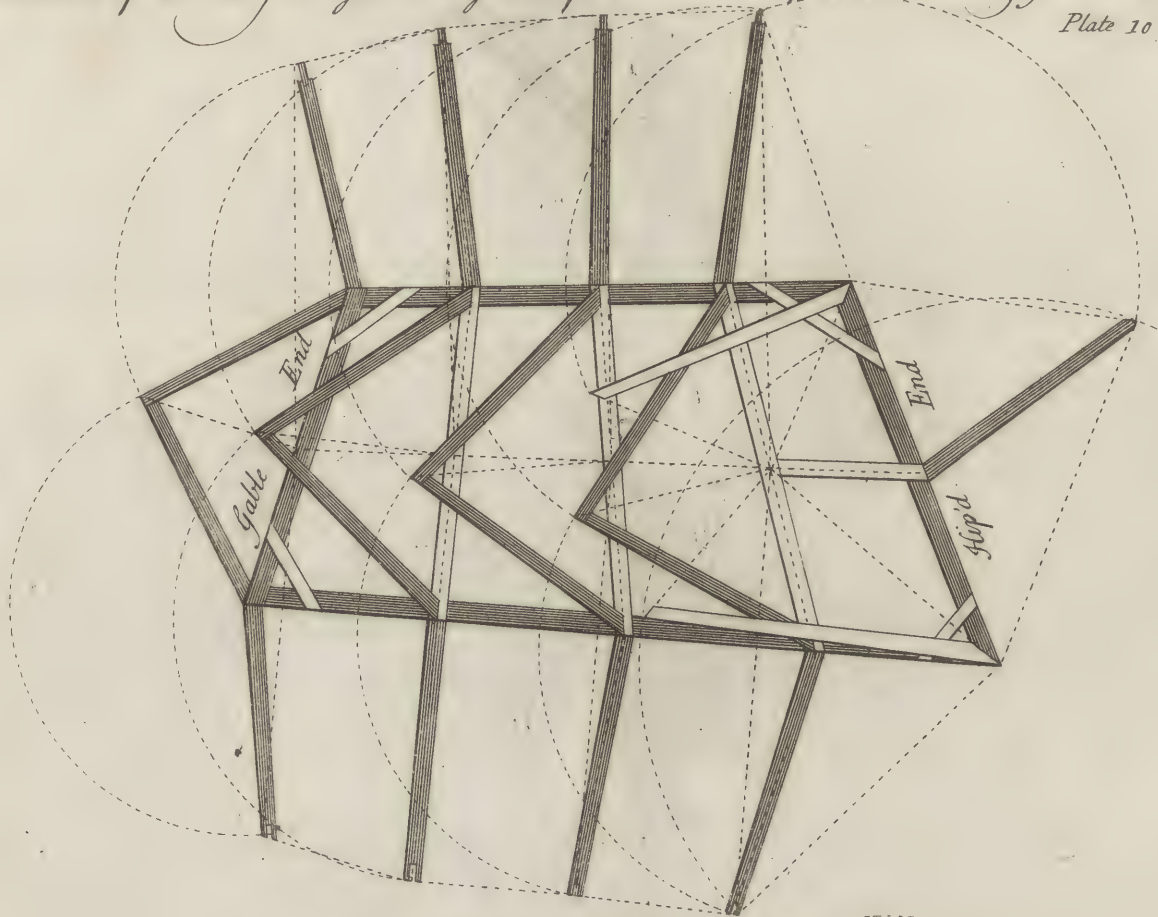
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Two Varieties of Framing Irregular single Roofs which are Hip'd at one End & Gabled at y<sup>e</sup> other

Plate 10.



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Two Examples of Irregular Roofs in Ledge

Requisites given for  
Example I. *a b c d*, the given  
Plan. of *Beams* Square  
to the Raising. *g h*  
Height of Pitch.  
*e h*, *h f*, pair of  
Principal  
Rafters

Requisites given, *a i*, *c i*, and *b h*  
*d h*. Diagonals *a l*, *m c*, and *n b*.  
*o d* lengths of Hips, *e p*, *h c* and  
*f p* & *Principals*, laid out. *r r* &  
*Purlins*. *s s* & *small Rafters*.  
*t t* & *Jack Rafters*.  
*i h* the Base of *y* Ridge.

Example I

Pitch

Principal

Operation

for Example I.

make *y* *Principals*

*e p* & *h c* and *f p* & *h c*

each equal to *e h* or

On *b* and *d*, with *n b* &

*o d*, *y* lengths of *y* two Hips

make *y* Section *q*; and on *a*

& *c*, with *a l* & *m c* *y* lengths of

*y* other two Hips, make *y* Section *u*.

Draw *y* lines, *c v*, *v a*, *a p*, *p p*, *p b*, *b q*

*g d*, *d p*, *p p*, and *p c* which completes

*y* Limits of *y* Ledge required

NB. The Distance between  
Beams, should never exceed  
10 or 12 Feet; Because the  
Cielling Joists that are  
framed into them ought  
to not to have a greater  
Bearing.

Example II

Pitch

Principal

To Back a  
Principal

Take away the

Prism *a b c* which

project beyond the

Raising, when the

Rafter is in its place



Requisites given for  
Example II. *a b c d* the given  
Plan. of *Beams*, bevel to  
the Raising. *g h*, Height of the  
Pitch. *e h*, *h f*, Pair of principal  
Rafters. *a i*, *i c*, *b h*, *h d* Diagonals.  
*a l*, *m c* } lengths of Hips  
*n b*, *o d* }

Operation for Example II

Divide *i h* in 3 or parts at *g p*, & draw  
*y* Lines *s w* & *c e* at right angles to *i h*  
On *y* Points *e e* & *d d*, with the  
length of *e h* One of the principals, make  
*y* Sections *s s* & *c c* and *w w* & *e e* then draw  
the Limits as in Example I.

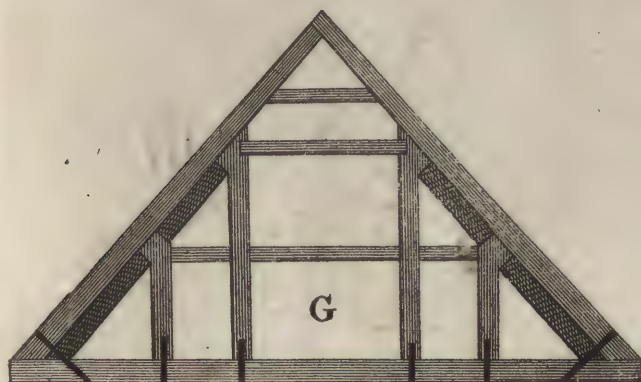
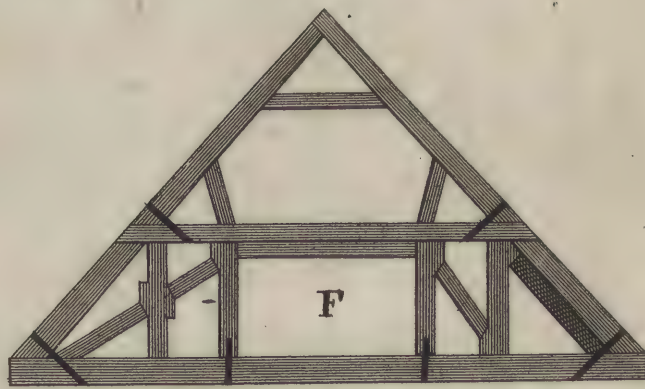
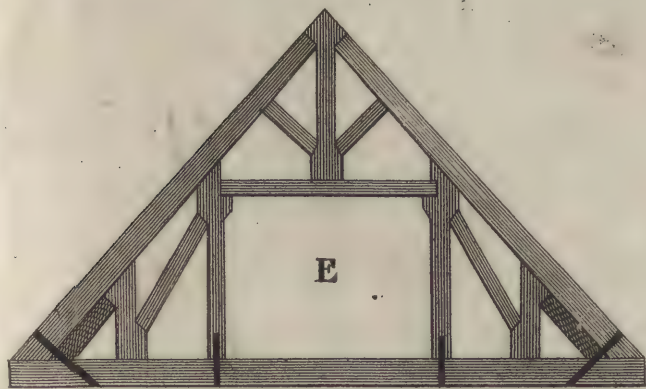
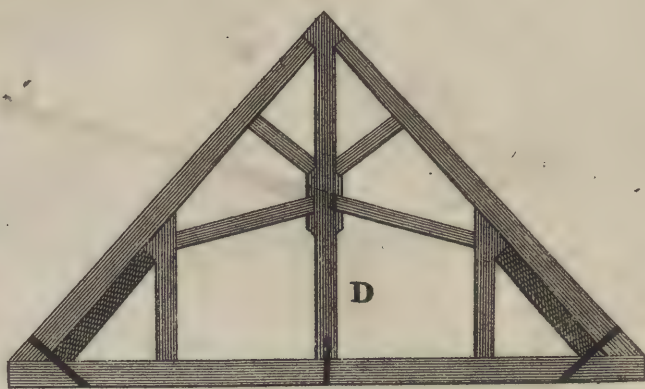
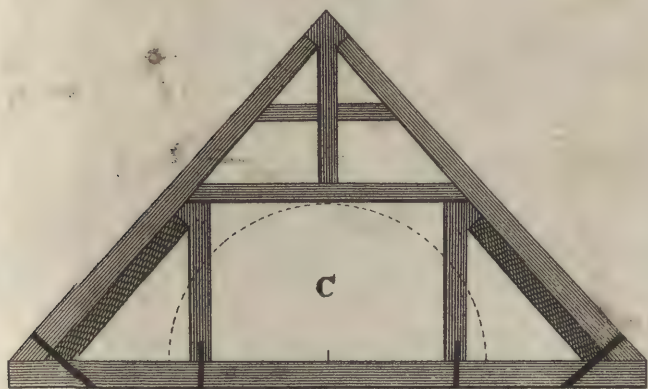
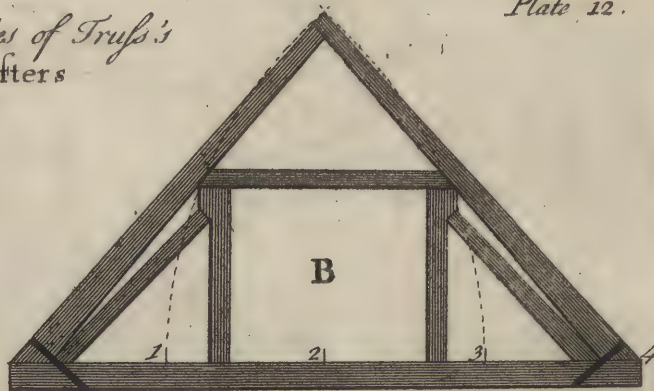
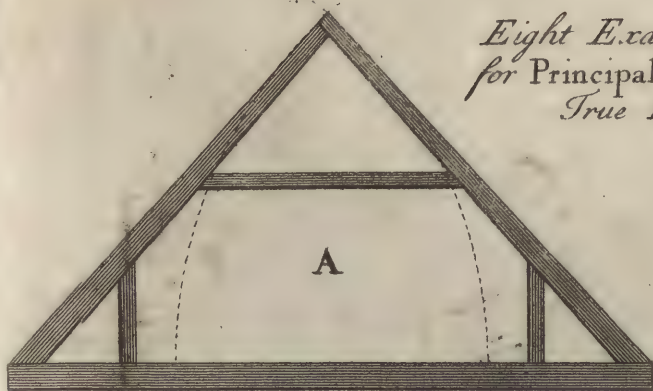
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*Eight Examples of Truss's  
for Principal Rafters  
True Pitch*

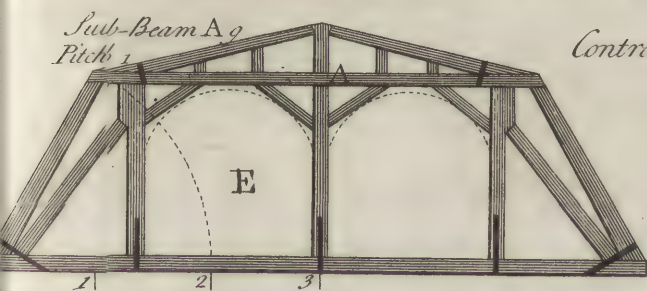
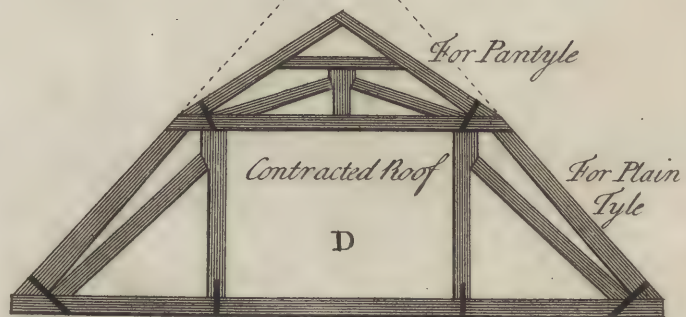
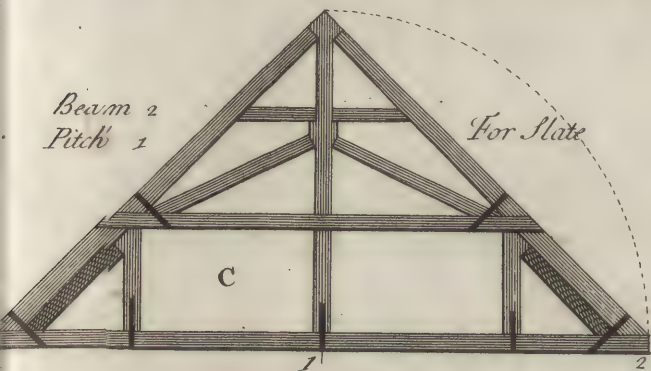
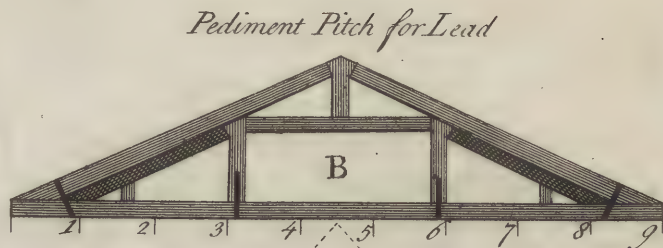
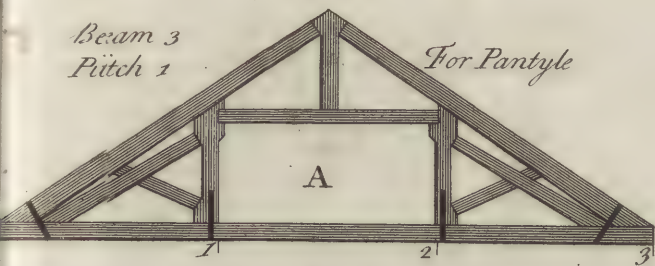




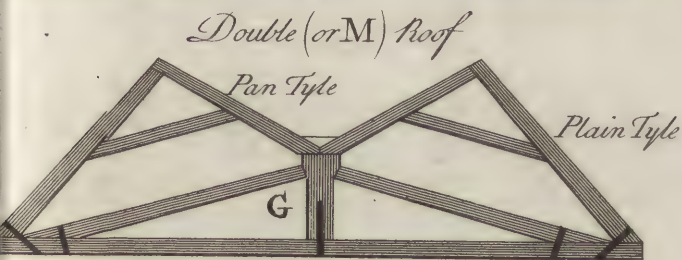
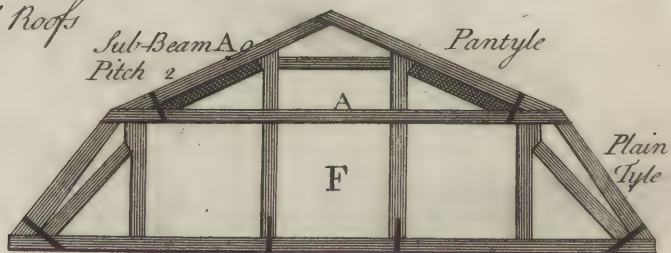


# Ten Examples for Truss'd Roofs

Plate 33



Contracted Roofs



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SECTIONS of Truss'd Roofs with Remarks

a a Beams  
b b Principal Rafters  
c c Iron Straps  
d d King Posts

Fig I

e Prick Posts  
f Discharging Struts  
g Struts uselefs, when the Length of Bearing don't exceed 12 Feet as is the case in Fig II

For a Church

13:06

40:00

13:06

h h Principal Posts  
i i Tie, or Hammer Beams  
k k Circular Ribs to receive the Ceiling Joists.

Fig II

l Suffening Braces  
m Discharging Braces  
n n Uselefs Braces which should have been placed as the discharging dotted Braces do.

At Greenwich Church in the County of Kent Extent 60 Feet

p p Sub-principal Rafters  
r Punchin

Fig III

q q q q Interties in Fig II which should have been an entire Collar Beam to prevent Sagging by the Shrinking of the King Post and Prick Posts.

At St Paul Covent Garden in the Liberty of Westminster. Extent 60 Feet

Fig IV

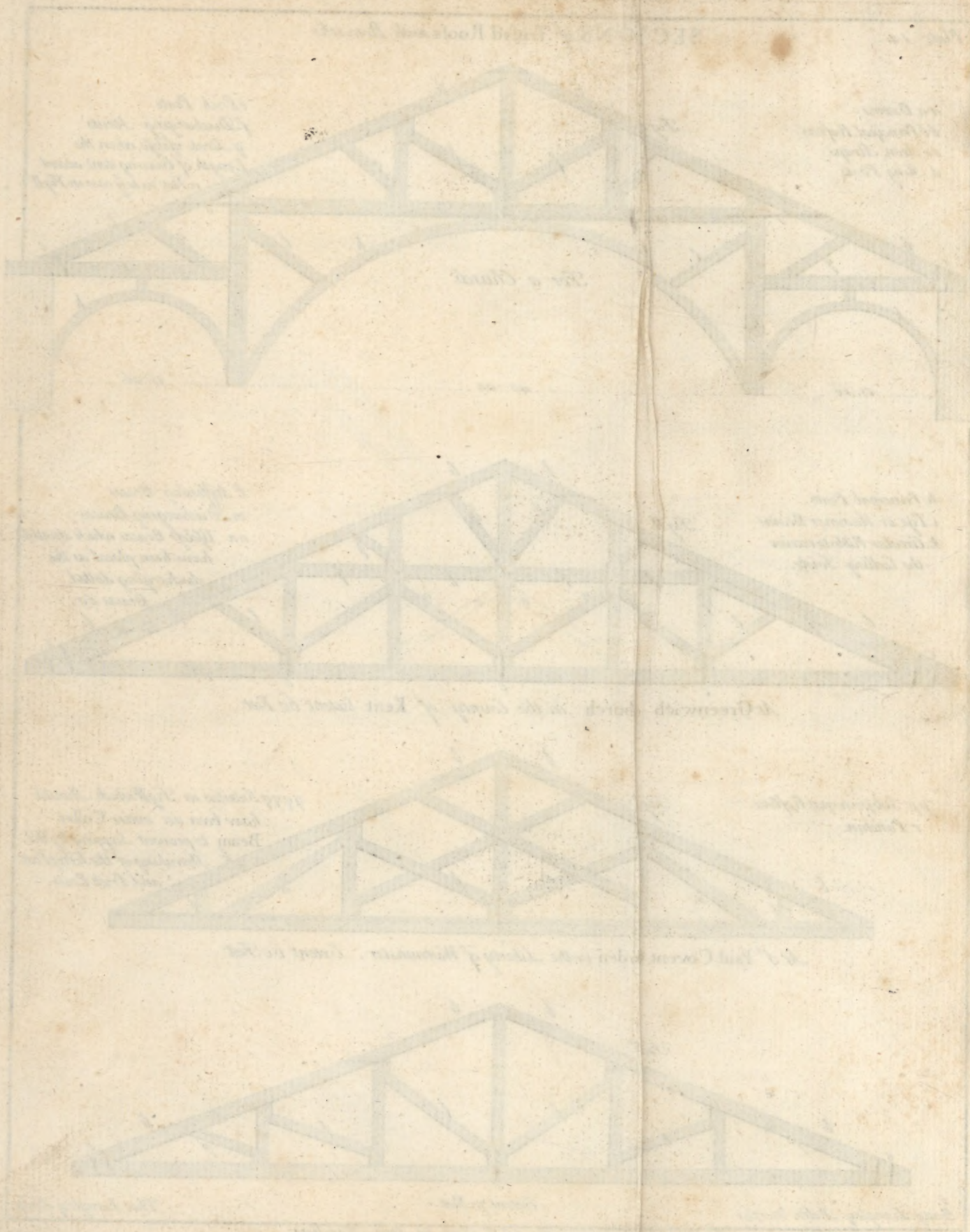
Extent 70 Feet

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